COMPUTERWORLD

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NEWSPAPER

NEWS IN BRIEF

Decsystem-20 Coming With Virtual OS, T/S?

By Don Leavitt
Of the CW Staff

MAYNARD, Mass. – Digital Equipment Corp. has apparently completed the specifications of a "high-performance, virtual memory system" called the Decsystem-20.

Although company spokesman had no comment, internal documentation dated October 1975 claimed the hardware "provides a multitasking, multiprogramming environment to support concurrent timesharing, batch and transaction processing."

DEC has integrated the central processor, memory and I/O controllers in its design of the Decsystem-20, which covers only 28 sq ft of floor space. Internally, the processor is built of "high-density, multilayer circuit boards and emitter-coupled logic (ECL) circuitry," according to the "company confidential" marketing guide.

The Decsystem-20 memory system consists of from 64K to 256K 37-bit words. Memory cycle time is 1.28 μsec for a single access, but user-controlled features can enhance this rate, providing a mem-

(Continued on Page 5)

IBM Ready to Collect Cancellation Penalties

ARMONK, N.Y. – IBM users who broke long-term leases for peripherals in the last two years will receive invoices charging penalty payments from the company by the end of this month.

IBM was barred from collecting cancellation penalties on early termination of extended-term and fixed-term contracts by Judge A. Sherman Christensen in September 1973 as a result of the original Telex antitrust action.

"IBM's fixed-term plan was generated and implemented at the time it was with the primary intent and purpose of suppressing plug-compatible competition and to maintain its monopoly power," Christensen said in his decision against IBM [CW, Sept. 26, 1973].

When the Tenth Circuit Court of Appeals overturned the lower court's decision, IBM promised "swift action" in collecting the penalty payments on long-term lease cancellations [CW, Feb. 12].

The penalties were reinstated on Oct. 20, shortly after Telex announced it would not appeal to the Supreme Court. They will be collected retroactively to the time they were suspended.

IBM declined comment on how many users will be affected.

Wants Legislative Safeguards

Levi Shelves FBI Message-Switching Plan

By Nancy French
Of the CW Staff

WASHINGTON, D.C. – The Federal Bureau of Investigation (FBI) has been denied permission to proceed with its computerized message-switching system until legislation is passed to regulate the exchange of computerized criminal history information.

U.S. Attorney General Edward H. Levi tabled the communications plan last week, bringing to an end a six-month dispute between the FBI and members of Congress who saw the FBI-controlled system as leading to a "national police force" [CW, Oct. 30, 1974].

The proposed network would have enhanced the FBI's National Crime Information Center's Computerized Criminal History (NCIC/CCH) system by switching any state request for a computerized criminal record from an NCIC/CCH index to the state where the particular record resides.

Every state request for information – including administrative messages – would go through the FBI system.

Under the plan, records of multistate offenders would have been stored in Washington computers. Single-state offender records would have been maintained in their respective states as soon as they had the technical capability of doing so.

Until that time, however, the proposal called for the FBI to maintain even single-state offender records here.

Widespread Criticism

Capitol Hill was not the only source of criticism for the plan.

The White House Office of Telecommunications Policy, the Domestic Council Committee on the Right of Privacy and the Law Enforcement Assistance Administration objected to the plan in meetings and official memoranda [July 23].

State governors and attorneys general also challenged the plan on grounds the system would give the FBI ability to monitor the operations of state law enforcement agencies and otherwise intrude in state matters – a role they considered improper for a federal law enforcement organization.

Although a report on the matter was sent to the White House about 10 days ago, and President Ford saw the report, no one would comment on what position he took in the controversy.

Sources noted, however, that whatever information he gave the Attorney General helped Levi come to a final decision since Levi's announcement followed so quickly after the President saw the plan.

"Levi had all the information needed to make the decision some months ago, but he didn't act. The only new information

(Continued on Page 4)

Performance Upgrades Featured On Cardless IBM 370/115, 125

By Ronald A. Frank
Of the CW Staff

WHITE PLAINS, N.Y. – IBM has introduced performance upgrades for the 370/115 and 370/125 following the lead set earlier by its World Trade division [CW, Nov. 5].

Both systems now come in cardless configurations relying on the 3540 diskette for I/O and can have increased on-line disk storage. The 115 can have up to eight 3340 disk drives while the 125 can have up to 16 3340 drives.

The two 370 systems now operate with string switching, which allows a disk subsystem to be shared by two CPUs and allows the smaller 370s to back up a larger 370 mainframe, IBM said.

The 115 has an additional satellite processor within the mainframe that improves the internal instruction execution rate between 55% and 75%, the company said.

In the 125, the control storage cycle time has been improved from 480 nsec to 320 nsec. This improves the 125 instruction execution rate between 20% and 30%, according to IBM.

The 115 has a faster multiplexer channel which can operate at 25K byte/sec in byte mode. This is described as one-third faster than the earlier model.

In addition, main memory has been increased to 256K, an increase of one-third.

All features can be installed in systems in the field, with first shipments scheduled for second quarter of 1976 on the

(Continued on Page 4)

Honeywell Sets First Loyalties To Users With Upkeep Contracts

By Nancy French
Of the CW Staff

WALTHAM, Mass. – Users who want Honeywell maintenance and no-hassle parts availability should be prepared to sign a maintenance contract or pay a premium for what they do get, according to Richard R. Douglas, vice-president of DP operations for Honeywell Information Systems.

For a variety of business reasons, Honeywell has decided to emphasize service to contract customers and has "set field service plans and staffing levels to meet their needs," he explained.

Time and materials customers get what's left over. "They create an added workload for our field staff," he explained, "so to assure service to these unscheduled users does not impact on service levels for our contract customers, and also to absorb the cost of this service, we have set a noncontract rate of $95/hour with a four-hour minimum."

Douglas spelled out this policy in an interview here recently in answer to objections some noncontract users have expressed about changes in the mainframer's maintenance policies [CW, Aug. 6].

Douglas also explained the company's reasons for giving up precertification of systems – even those that have been under its maintenance – when that equipment is sold to another user.

"While it is true that Honeywell has given up precertification, we will inspect that system and give the seller a letter of condition," Douglas said.

The statement the seller receives at the time of sale will include such information as the software release under which the system is running, a list of the exact configuration and types of equipment by name and serial number and the fact that the system has been under Honeywell

(Continued on Page 4)

EFTS Unit Chided for DP Lack

By Don Leavitt
Of the CW Staff

WASHINGTON, D.C. – The National Commission on Electronic Funds Transfer has become a reality, but not without sharp complaints from at least one industry group.

The Association of Data Processing Service Organizations (Adapso) has issued a position paper criticizing the makeup of the commission, because it fails to include anyone "with special experience and qualification in the computer industry" as required, implicitly at least, in the enabling legislation.

Not a single member of the commission is now employed by a computer manufacturer or service company, the association noted and "this absence at the policy level would seriously affect the direction of the commission's study."

The commission was mandated to study electronic funds transfer systems (EFTS) by an act of Congress about a year ago. Various government officials are automatically on the study group, but President Ford delayed naming its chairman and industry and "public" members until very recently [CW, Oct. 15].

On Oct. 29, the Senate confirmed retired U.S. Congressman William B. Widnall as chairman of the commission. He took the oath of office early this month.

Adapso continued its blast by urging Congress to "condition" any extension of interim and final reporting dates "upon the appointment by the President of an individual to the commission who can bring a broad experience

(Continued on Page 5)

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In U.S. vs. IBM Antitrust Trial

NCR Balks at Giving IBM Five-Year Plan

By Edith Holmes
Of the CW Staff

NEW YORK – It was one of the more dramatic moments in U.S. vs. IBM thus far.

"Mr. Hangen, I believe that you have in your hand the current five-year plan for NCR, is that correct? . . . May I ask that I be given an opportunity to take a look at it?" David Boies, an attorney for IBM, asked John J. Hangen, senior vice-president in charge of corporate affairs for NCR Corp., during the executive's cross-examination here recently.

"I refuse to provide it to you. This is highly confidential information based on NCR's plans and strategies for the next five years, and we consider it as being something that is very company confidential," Hangen replied.

And, in response to questions from Judge David N. Edelstein, he added, "I want to be sure that it is not made available to anybody that could use it to the detriment of NCR, Your Honor."

"Does that include the defendant in this case?" the court asked.

"If the defendant is IBM, I certainly would include the defendant," Hangen stated.

Just the Beginning

This brief, open-court tussle over NCR's product plans and strategies for the next five years proved to be but the beginning of a more extensive battle between IBM and NCR over the last two weeks for further document production by one of the third parties in the case.

Noting that both Hangen and NCR had failed to comply fully with several subpoenas, one as late as Oct. 17, for documents from its files and that some of the material requested in a subpoena served on Hangen in May 1974 has since been destroyed, IBM counsel issued a memorandum to Edelstein on Oct. 23 asking Hangen's cross-examination be deferred until he and his company produce the requested documents.

In an answering memo to the judge, NCR counsel claimed IBM had had ample opportunity – "more than a year" – to acquire this material. Referring specifically to the Oct. 17 subpoena, attorneys for Hangen and NCR said "to seek this type of discovery during the cross-examination of a witness turns the subpoena process into a device for oppression and harassment. NCR is outraged at this behavior by IBM and believes the court should be also."

IBM Motion Granted

But, when Hangen reappeared in court to take the stand on Nov. 3, Edelstein informed the witness and his counsel he had decided to grant IBM's motion. Hangen was then dismissed and given 10 days in which to complete production of the documents requested by the defense.

In his written opinion filed on Nov. 6, the judge indicated he had been persuaded by IBM's argument that there exist a number of NCR documents necessary to an adequate cross-examination of Hangen which had never been produced, despite earlier subpoenas.

"These earlier subpoenas, IBM points out, have never been challenged by NCR or Mr. Hangen," Edelstein noted in his opinion. He added that the Oct. 17 subpoena related specifically to Hangen's direct testimony and to two documents entered into evidence by government attorneys, but neither NCR nor Hangen had attempted to dispute these subpoenas.

The court also commented on IBM's argument that there were several deficiencies in NCR's and Hangen's responses to the Oct. 17 subpoena.

"With respect to documents authored by Mr. Hangen, defendant indicates that although Mr. Hangen has been a high-level officer of NCR for a number of years, IBM has thus far received in response to its various requests only three letters or memoranda authored by him," the judge said.

"IBM avers that counsel for NCR has consistently assured defendant that the reason for the small response was that Mr. Hangen did not maintain any files," Edelstein continued. "Based upon the testimony during Mr. Hangen's cross-examination that he did indeed maintain files of those documents which he originated, IBM asks this court to infer that, given Mr. Hangen's extensive responsibilities with regard to NCR's electronic data processing business, NCR and Mr. Hangen have failed to comply with the subpoenas served upon them."

The judge said that without trying to examine each of IBM's similar charges of deficiencies, he also noted NCR's answering memorandum stated there were documents sought by the IBM subpoenas that have not been produced.

"Thus, when NCR argues in its memorandum in opposition to this motion that it has made 'substantial' compliance with the subpoenas, it becomes quite clear NCR has not fully complied," Edelstein added.

Taken together, NCR's additional arguments that "IBM has had knowledge for over a year of the existence of most of the documents sought in the Oct. 17 subpoena," that Hangen has recently discovered files containing documents which may be responsive to earlier subpoenas and that allegedly confidential documents should not be produced without adequate safeguards to prevent disclosure of the information to NCR's competitors – led the judge to conclude the witness and the corporation had not produced the material they should have.

By the filing of the judge's opinion, the government had written no papers on behalf of its witness and his corporation. In several robing room conversations between the parties and the judge, however, attorneys with the Department of Justice did note they had not been informed of the Oct. 17 subpoena until Monday, Oct. 20 – when the documents requested were to be produced.

NCR did permit one government and one IBM attorney to review the plan following Hangen's refusal to let Boies see the document in court. "From that review, it is apparent both that the plan does contain a great deal of information that NCR considers to be highly confidential and a significant amount of information which is quite relevant to the cross-examination," Boies told the court.

The parties have been working with NCR to devise a means of using only the relevant, nonconfidential portions of the document without exposing the entire five-year plan. Whether an agreement has been or will be reached will only be certain when Hangen again takes the stand and is questioned about this document. When that will be is as yet unclear.

On the Inside This Week

NEWS

Effort to Upgrade Job Choices Stymied by Women DPers . . 5
Share Published Third Volume of CPE-Related Papers 6
DP Staffs Have Grown Since Last Year, Study Finds 7
Simulation Confirms Proposed Encryption Algorithm 8
No 'Love Matches' Allowed for Canines 9
Models Show Human Race Would Survive Nuclear War . . . 10
Federal Agency Uses DP to Select Food Vendors 11

EDITORIAL

Editorial: Unearned Revenue 12
White Hat, Black Hat: ACM Minneapolis 13
Taylor Report: Ignoring Problems in Data Bases 13
Technology Flounders When Timing Off 15
Not Form But Substance Issue at 4th and Main St. 16

SOFTWARE & SERVICES

Initial Study Group on DBMS Standard Hits Impasse 17
Common Solutions Appear for Very Large Data Bases . . . 19
Models Modernize Metalworking Managers' Milieu 21
NCR Extends Manufacturers' Software 22

COMMUNICATIONS

IBM Upgrades 3705 Front End 23
NP/80 Has Communications, Data Base Management 23

TERMINAL TRANSACTIONS

'Tics' Speeds Design of Systems 25
Chemical Firm Uses Data Base to Monitor Rail Cars 27

SYSTEMS & PERIPHERALS

IBM 3340 Introduced Generation of Disk Technology . . . 31
Reports on Momentum to Distributed DP Exaggerated . . . 35
DP Manages Complex Manufacturing Environments 36

MINIWORLD

Newspaper Saves $1,500/Mo With Minis 37
NCR Has Small Hospital Turnkey System 41
Mini Speeds Tests of Disabled Patients 42
Turnkey Mini Untangles Textile Firm's Inventory 43

COMPUTER INDUSTRY

Lacey Explains CDC's Profit Picture 45
GE Lacked Management Commitment to DP: Weil 46
Cyber 170s Feature Something Old, Something New 47
Trade Balance Shrinks; DP Imports Outpace Exports 48
Court to Bar DCC From Using DG Logic Drawings 49
Trend to Hybrid Disks Seen Developing 50
Shugart Expects 1976 Sales to Climb to $9 Million 51
Printer Activity Abounds 52
DP Stocks Make Wema Top 10 54

FINANCIAL

Pertec Earnings Double in First Quarter 62
CA Sets Records in Three Months 62

NBS Finds Privacy Conversion Costs Less Than Expected

By Nancy French
Of the CW Staff

WASHINGTON, D.C. – "The cost of retrofitting computer systems to meet privacy requirements will not be as great as has generally been expected," Dr. Ruth Davis, director of the National Bureau of Standards' (NBS) Institute for Computer Sciences and Technology, told the Privacy Protection Study Commission here recently.

Davis based her remarks on the results of a computerized privacy cost model, developed under NBS direction, to determine the technological costs to federal agencies of meeting the requirements of the Privacy Act of 1974.

The cost estimates Davis cited were based on data collected from several agencies and compiled to depict a hypothetical composite "Agency X."

Agency X was assumed to operate an on-line system processing a data base of 7.5 million records. Record length was 500 characters, and records were considered valid for five years.

Personnel costs were as follows: administrative, auditing and programming: $20/hour; clerical and guard duty: $6/hour; batch processing on the computer: $360/hour.

Since the model did not specifically address recordkeeping costs per se, representative costs could not be broken out for all recordkeeping activities.

The privacy conversion cost involved in collecting data directly from the subject was estimated at $111,000.

The provision of the law requiring that all information be collected directly from the data subject whenever practical calls for considerable revision of data collection forms, Davis said.

The cost of labor to redesign the forms and replace the existing forms inventory resulted in a privacy conversion cost of $111,000 for Agency X, according to the model.

Agency X results were based on the assumption that 25 distinct data collection forms were in use and that an average of 150 hours of administrative time were required to redesign a form. It further assumed the average inventory for each form was 150,000 copies and the forms cost .015 cents each.

For Agency X, no additional annual operating cost was found, indicating the method of operation was basically unchanged and old forms cost about the same as new ones, she said.

Data Input Costs

The general question of data input is a broad one, including input validation, and periodic edit checking, audits of systems compliance and protection of data, Davis noted.

Maintaining records accurate and complete enough to comply with the law cost Agency X an annual sum of $480,000, with one time-conversion costs judged at about $20,000.

As for systems assurance, Agency X would have to budget an additional annual outlay of $29,000, with conversion also estimated at about $20,000.

Physical security cost even more, with initial conversion estimated at $124,000, and an added annual expense at $78,000.

These figures were based on the assumptions that the agency used 25 programs which access the data base and that 10 hours were required to implement each check.

Clerical verification of 150,000 records was possible, although the rate of expiring records both reduced this to 75,000 verifications and introduced a need for purging, Davis said. Clerical verification of a record was set at one hour.

To assure reasonable accuracy and completeness of records, systems must be audited to determine that processing is being performed in compliance with specifications, she explained.

Developing audit software and tests, operation of audits and analyzing their results costs Agency X $29,000 annually, with $20,000 needed for initial conversion, the model showed.

About 900 hours of programming time and 100 hours of auditing time would be needed to develop the auditing software, she said.

About 100 hours of computer processing time and 1,200 hours of labor would be required for auditing annually, she added. Software maintenance was included in the total annual cost, she noted.

700 Federal Systems Handle Personal Data

WASHINGTON, D.C. – Current estimates indicate 700 computer systems are used in the Federal government to process personal information, according to Dr. Ruth Davis, director of the National Bureau of Standards' Institute for Computer Sciences and Technology.

The figure was based on the General Services Administration (GSA) inventory of general-purpose computer systems, published accounts of systems of records reported in the *Federal Register* by agencies of the Federal government as required by the Privacy Act and data from the Ervin Committee report of 1974, Davis told the Privacy Protection Study Commission here recently.

About 16 agencies account for approximately 58% of the reported 8,000 systems of records and 90% of the federal computer inventory, she said.

The Defense Department leads the list, with 2,207 general-purpose computers, according to the GSA inventory. Treasury is second with 111 and the National Aeronautics and Space Administration is third with 67.

The Department of Health, Education and Welfare (HEW) is fourth with 64 and the Commerce Department is fifth with 63 systems.

According to inventories published in the *Federal Register* in August, the Department of Defense leads in numbers of record systems, reporting 2,100.

The Treasury Department is second with 996, HEW is third with 658, the Department of Transportation is fourth with 231 and the Department of Justice if fifth with 159.

As for the number of personal data banks, the Ervin Committee report of 1974 showed the Defense Department again leads with 478, of which 430 are automated. HEW is second with 61 personal data banks, of which 60 are automated, and Treasury is third with 46 personal data banks, of which 38 are automated, she said, illustrating the magnitude of the retrofitting problem.

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Attorney General Tables FBI Message-Switching Plan

(Continued from Page 1)

available would have been a statement from the White House," a source said.

In a letter to Sen. John V. Tunney (D-Calif.) and Rep. Don Edwards (D-Calif.), Levi said "much of the advice we have received regarding the FBI proposal has been critical of the concept of exchanging computerized criminal history information and of the contemplated role of the FBI in the proposed program.

"Some of this criticism reflects a measure of misunderstanding about the proposal. Nevertheless, this criticism reflects a widespread and genuine concern, which we share, regarding the privacy of criminal justice information and the proper role of the Federal government in law enforcement today.

"In my view it is essential that the questions raised in the discussion of the FBI proposal be authoritatively resolved before a decision on it is made," Levi explained.

The FBI refused to comment on the announcement, but after receiving the letter, Tunney issued a statement saying the attorney general's decision "will slow the frightening drift toward a highly centralized police force.

"I welcome his view that such complicated issues as message switching should be considered in a legislative context. Whoever controls criminal justice message switching will inevitably wield enormous power over the lives and reputations of all citizens.

"Giving this unlimited power to the FBI without careful scrutiny begs for abuse," he said.

Prospects for future FBI message switching are dim, Capitol Hills sources said.

Edwards reaffirmed that view in a statement issued in response to Levi's letter which said: "Today's announcement . . . regarding message switching . . . reflects a new awareness on the part of the executive branch that Congress must exercise its duty to set policy regarding authority of federal agencies.

"The Subcommittee on Civil and Constitutional Rights of the Committee on the Judiciary has begun working on legislation which in its present form eliminates the FBI as the conduit for . . . criminal justice information," he said.

In formulating policy related to criminal record information handling, "we must answer the questions, "How are the states best served? 'Can multistate problems be addressed without federal intervention' and 'Who should solve state criminal justice problems – the states or some federal agency?'

Honeywell Loyalty to Contracts

(Continued from Page 1)

maintenance, he explained.

While this "in no way represents a warranty" on Honeywell's part as to the long-term maintainability of the system "provided the entire system is installed at the new site within 30 days, the inspection and installation charges should be minimal," he said.

Honeywell users who choose to obtain maintenance service from another company should look to that company for this service, he said, adding "this policy protects the user as well as Honeywell.

After equipment has been delivered to the new user's site and the new user has signed the agreement for equipment support services Honeywell will provide the necessary inspection, installation and testing and advise the new owner on what work needs to be done, according to Douglas.

Since the new owner will obviously be without a maintenance contract, the work will be done at time and material rates, he said.

In explaining the company's policy change, Douglas said, "in the past we found we were precertifying equipment for maintenance at a location to be defined after equipment was stored in warehouses, allowed to deteriorate or was damaged."

Still another issue that has concerned users who either do their own maintenance or who have contracted for maintenance with a third party is the difficulty of getting spare parts, plus the $50/item charge for parts ordered.

According to Douglas, noncontract customers must allow the same lead time for spare parts as the field stocking staff. This is 39 to 52 weeks, he explained.

"Why should we be expected to deplete our field inventory to service noncontract users at the expense of our contract customers?" Douglas asked.

IBM Cardless 370s Feature Upgrades

(Continued from Page 1)

115 and first quarter of 1976 on the 125.

Costs of the new models will be higher. A 64K 115 that cost $3,235/mo rental or $122,150 purchase will increase 31% to $4,250/mo or $160,250 in the new configuration. A 96K Model 125 that was $5,355/mo or $201,650 will jump 12% to $6,030/mo or $227,050.

On the high end, a 196K Model 115 which was $4,275/mo or $159,050 will jump 20% to $5,150/mo or $191,850. A 56K Model 125 formerly $6,480/mo and $241,150 will go up 10% to $7,155/mo or $266,550.

IBM also announced several software enhancements. The Extended Telecommunications Modules (EXTM) Version 2 allows the 3790 terminal system and the 3606 and 3608 banking terminals to be used on the 115 and 125. EXTM Version 2 operates in a Systems Network Architecture (SNA) environment and costs $215/mo.

The Disk Operating System/Virtual Storage Entry Time-Sharing System is described as a small system for 115 and 125 users, but it can operate on any 370 using DOS/VS. The field-developed program costs $250/mo.

IBM also announced it has issued Release 32 of DOS/VS. An installation enhancement release called DOS/VS IER will be available in December for users who are first implementing the operating system. Both releases are available without charge.

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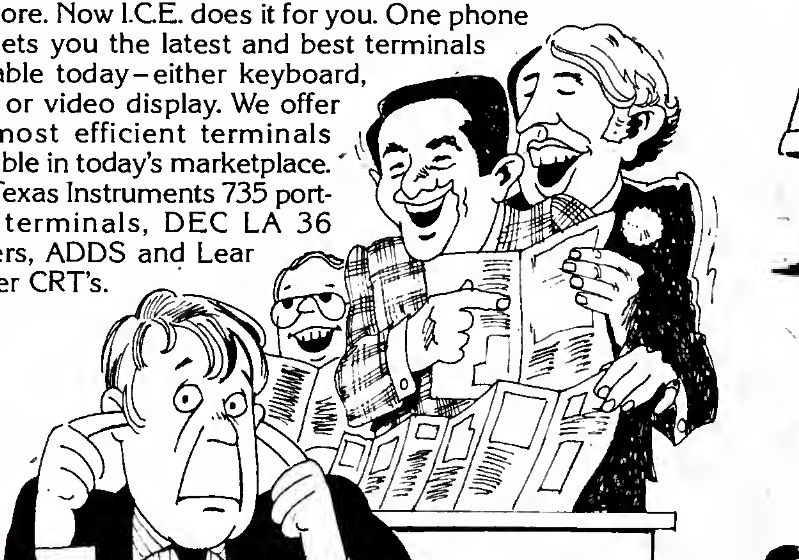

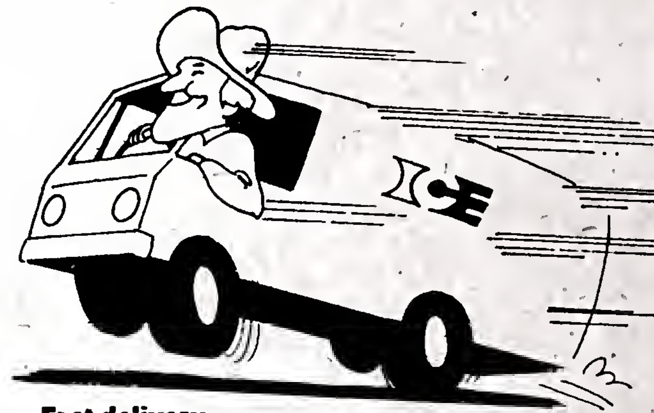

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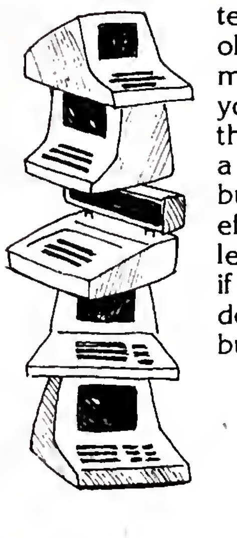

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Response to Questionnaire Poor

Effort to Upgrade Job Choices Stymied by Women DPers

By Catherine Arnst
Of the CW Staff

MINNEAPOLIS – Efforts at the University of Minnesota to upgrade women's occupational choices by compiling a statistical sampling of female DPers have met an impasse because of the lack of response from women in the industry.

The Center for Interest Measurement at the university is compiling statistics for the Strong-Campbell Interest Inventory, an instrument used to help people make career choices. The Strong-Campbell test is being revised to produce fewer sex-biased results, and occupational scales for women taking the test are being upgraded in terms of status and salary, Dr. Jo-Ida Hansen, director of the center, said.

The test, which is published by the Stanford University Press, originally contained lower status and lower paid career choices for women than men and had separate male and female forms. It now has only one form.

When an individual takes the test, the person's results are compared with a sampling of people already in a certain field as a whole and separately with those of the same and opposite sex.

Sampling Hard to Get

The center has had an extremely difficult time compiling an accurate statistical sampling of women in DP, Hansen said. "We had a hard time getting an initial mail list," she explained, noting the center tried several professional societies, including the Association for Computing Machinery, and got little response.

Finally, Hansen said, the Society of Certified Data Processors did offer assistance and sent out the questionnaire to 2,800 people in mid-July.

The center has received about 1,000 responses from men in DP as a result, Hansen noted, but only 45 usable responses from women. She would like at least 200 women to respond.

It will be two more months before the survey is completed, Hansen said, and she is still eager for more input from women in the field. Those who answer the questionnaire will receive an individualized profile, she added.

For women interested in participating, Hansen can be contacted at the Center for Interest Measurement, 101 Eddy Hall, University of Minnesota, 55455.

EFTS Unit Chided for DP Lack

(Continued from Page 1)

in computer matters to the deliberations of that important body."

It concluded with a plea for a congressionally mandated moratorium on "unnecessary EFTS developments" until the work of the commission has been completed.

Almost concurrently with Widnall's confirmation, the House of Representatives passed a bill revising the original schedule of reporting dates – which had become impossible to meet because of the long delay in naming the commission members.

For its part, the House included an extension of the reporting dates as part of a three-part bill it passed in late October. There is nothing in the bill's text that ties the extensions to the appointment of a new commission member who would be deemed a computer expert, such as Adapso proposed.

Ironically, the language setting up the reporting deadline extensions was added to the current legislation as an amendment, replacing a section which would have imposed the EFTS moratorium Adapso and various others have sought.

The new schedule, still subject to consideration by a Senate-House conference committee, requests a report to the congressional committees concerned with EFTS within six months of final enactment of the legislation. It also calls for the commission's final, formal report to be prepared within two years of the date of the chairman's confirmation.

The most immediate task Widnall faces is the naming of an executive director for the commission. This nomination, subject to confirmation by the Senate, is expected to be made in "a couple of weeks," the chairman said, and the first meeting of the commission itself should take place "before early December."

Decsystem-20 Coming With Virtual OS, T/S?

(Continued from Page 1)

ory bandwidth of "more than seven million bytes per second" under four-way interleaving.

The integrated "high-speed mass storage" controllers interface DEC's RP04 disk drives and TU16 tape drives to the data channels in the memory controller.

A DEC PDP-11 is used as a front-end processor for the Decsystem-20 and controls low-speed peripherals such as card readers, line printers and asynchronous communications devices.

It also manages console operations for the system, on-line and remote diagnostic analysis and microcode loading and system startup, according to DEC.

The operating system for the Decsystem-20 (Tops-20) supports program execution in user or Exec mode. Languages include Cobol, Fortran, Basic, APL, Algol, something called CPL and a macroprocessor.

The system supports 383 instructions implemented in microcode but grouped into logical families for easier management. This extensive repertoire is said to enable programmers to use far fewer instructions to perform a given function, and compiled programs are described as "30% to 50% shorter" and faster in execution than programs on comparable computers.

No prices or announcement dates were listed in the guide or available from DEC spokesmen.

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Share Publishes Third Volume of CPE-Related Papers

CHICAGO – Share, Inc., the IBM user organization, has published for general distribution another volume of papers related to computer performance evaluation (CPE).

Like the two volumes published last year [CW, Sept. 4, 1974], this soft-cover book is made up of papers originally gathered by Share's Computer Measurement and Evaluation (CME) project. Bringing the publications "up to date," this volume covers the period from December 1973 to March of this year.

Studies in the latest book focus on the System Measurement Facility (SMF) and other accounting systems, software and hardware monitors, simulation and modeling and charging systems.

Other areas covered are operating systems, hardware evaluations, planning and forecasting and computer performance management.

User meetings sponsored by Share, Inc., have been generally recognized as good, useful and productive for attendees, but have not been open to the DP community at all. Publication of the first CPE volume was hailed last year as a real attempt by Share management to meet the organization's stated purpose of fostering the "development, free exchange and public dissemination" of technical information.

Share's CME project, managed by Dennis R. Chastain of the U.S. General Accounting Office, represents "one of the most complete up-to-date sources of information available," according to Share President Edward J. Farrell.

The first volume of CME papers – now out of stock – included selections from 1967, when the project was first organized, to November 1971. Volume II – still available in limited quanities – covered the period from November 1971 to December 1973.

Available separately for $25 apiece, the 751-page Volume III and 829-page Volume II can be purchased together for $40. Requests should be addressed to Share, Inc., One Illinois Center, 111 E. Wacker Drive, 60601.

IBM Blamed for 'Naiveness' in Contract Dispute

By Kathleen Quinn
Of the CW Staff

LOWELL, Mass. – IBM's "naiveness" is responsible in part for an unresolved contract dispute which resulted in the removal of the firm's equipment from the Lowell High School (LHS) DP center last June, according to William Collins, the Lowell School Department's business manager.

The department refused to pay $6,000 which IBM said it owed in peripheral equipment back rental at an increased rate because the city had failed to issue a purchase order in January authorizing the continuation of the contract.

Although "both parties were guilty of some negligence," IBM should have known from its dealings with other municipalities it cannot increase prices in a contract which no longer exists, Collins said.

"I don't care if it's Lowell or where it is – it's wrong," he added. Notices of increases are not considered "straight, legal documents," and that is where the whole problem lies, Collins said.

The situation came to the attention of Harry Petros, LHS' DP director, last March.

City officials assured him at that time that, although the city cannot draw up a contract after the fact for services already delivered, something would be arranged so the center would not lose the equipment, Petros said.

"Then something weird happened."

In May, "out of a clear blue sky," he received a letter from IBM informing him the peripherals would be removed in 30 days – during a time when the equipment was needed to process students' report cards.

Petros feels the failure to resolve the issue may have been due in part to the recommendation of a consultant who, Petros said, believed the equipment was unneeded.

The decision was "that of the Lowell School Department," according to the consultant, however.

The city has since signed a contract with Unit Record Service Co., Inc. in Stoneham, Mass., for IBM equipment.

Managers' Chances to Move Outside DP Rising

By Toni Wiseman
Of the CW Staff

NEW YORK – Opportunities for senior DP managers to move into general management positions are increasing considerably, according to a career paths study conducted by the Diebold Group, Inc.

Although only 25% of the managers questioned said their predecessors had been promoted outside the DP division or had moved laterally into the mainstream of general corporate management, more than 40% now see valid opportunities for their own promotion outside DP, according to Joseph Ferreira, director of the research program.

"The movement is in two ways," Ferreira noted. "There is a very noticeable trend to promote personnel with general management experience to the position of senior DP executive.

"Whereas 80% of the current [DP] managers contacted were drawn from within the [DP] division, almost one-third of future [DP] managers will be taken from outside the division," he said.

Although very few chief executive officers questioned saw any reasons the senior DP executive should not be promoted to senior corporate positions, Ferreira said the DP executive's career path outside that department might well depend on his ability to make senior management aware of his capability in the area of general management.

The Diebold survey also found that the DP division has risen in corporate importance during the last decade. This is reflected in the fact that two-thirds of the DP managers surveyed now report to an officer no more than one level below the president.

It was also found that, although a technical background is needed, technical expertise is not the prime qualification sought by most of the senior managers when filling the senior DP position.

In fact, most executives did not even rate it among the top three qualifications for the job, Ferreira noted.

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Despite Cutbacks in Other Areas

DP Staffs Have Grown Since Last Year, Study Finds

By Toni Wiseman
Of the CW Staff

LOS ANGELES – While the recession has prompted a substantial number of companies to reduce their overall production of products or basic services since last year, there has been an overall general growth in the size of the DP staffs.

In a survey of 148 companies, 47% reported cutbacks in production and 56% closed down or cut back plant operations, according to a study conducted by the Jarvis Walker Group here.

These firms, additionally, cut their corporate employee staff by a total of 62%, the report noted, yet half the companies actually increased their DP facilities, and 35% have maintained DP departments at the same size and operating levels.

There has been a gradual – though controlled – growth in the size of DP staffs over the past five years, according to the report. Staff size has, however, not kept up with the overall growth of corporate DP budgets.

Sixty-two percent of the firms reported maintaining larger DP staffs today than in 1970, while during the same period 83% increased their total DP budgets.

Of these, 41% had a budget increase of 1% to 25%, 26% of the firms reported increases of 26% to 50%, and 24% had increases of 100% or more.

Payrolls have not, however, kept astride with facilities growth.

"Among the companies reporting, while half reported increasing the size of their DP installations in the past year, only 36% increased staff size during this same recessionary period," said Dan Jarvis of the Jarvis Walker Group.

"At the same time, 27% have at least maintained staff at the same level as a year ago.

"Thirty-seven percent of the companies responding did cut back DP staffs – but this was far less than the 62% which had reduced overall payrolls," he noted.

A more detailed study of budget allocation showed that 72% of the firms allocated 20% or more of the DP budget to developmental purposes in comparison with allocation for work output; at least one of every four companies allocated half of its budget to developmental work, and only 6% devoted less than 10% of the budget for this purpose.

This correlated with the finding that 80% of the firms reported data processing as an in-house function, with more than three-quarters of the firms using internally developed software to handle 80% or more of their needs.

All used internal programs for more than half of their requirements while only 9% used proprietary packages for 30% to 50% of their requirements. None of the firms reported using outside software for more than 50% of their work.

Firm to Investigate DP 'Complication' In N.Y. Lottery Mixup

ALBANY, N.Y. – The research firm of Arthur D. Little (ADL) in Cambridge, Mass., has been called in to study the "computer complication" which resulted in Gov. Hugh Carey's suspension of this state's lottery program. It was discovered that duplicate- and even triplicate-numbered lottery tickets were being sold, a spokesman for the governor said.

ADL was expected to release its findings to Carey last week, but Harry O'Donnell, the governor's press officer, said Carey will study the ADL report before making the findings public or resuming the state's lottery program.

Only when a "fail-safe system of computer programming and ticket production and selection can be established will the lottery games and drawings be resumed . . . The people who buy lottery tickets will be protected," Carey said, according to the press spokesman.

The problem was reportedly traced to "a programmer in the data processing section of the Racing and Wagering Board" where the tickets are prepared. The programmer, who was shown a batch of the ticket run, acknowledged he had made an error in programming the Oct. 31 Colossus drawing which offered a $1.4 million jackpot.

DP officials on the Racing and Wagering Board refused to comment further on the nature of the problem, except to say that the programming error has been corrected.

One added, however, that, since the error brings "the integrity of the whole system under question," the research firm was called in to set everyone's mind to rest.

A lengthy suspension of the lottery could cost the state a considerable amount of money, according to a spokesman for the State Budget Division.

The lottery was expected to bring about $44 million into this state's treasury during the current fiscal year.

ICCP Extends Deadline For CDP Applicants

CHICAGO – A record number of responses to the announcement of the Certificate in Data Processing (CDP) examination this year has encouraged the Institute for Certification of Computer Professionals (ICCP) to extend the deadline for applications.

Requests for applications have already reached 20,000, more than double the number for last year, according to the institute, which will continue to accept applications beyond the originally announced Nov. 15 deadline.

The CDP exam will be held at more than 100 selected test centers throughout the U.S. and Canada and 10 foreign sites. Specific requirements for this year's examination are detailed in the "Certificate in Data Processing Examination Announcement and Study Guide."

Both the study guide and application forms for the exam are available from ICCP at P.O. Box 1442, 60690.

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Software Test Results Identical

Simulation Confirms Proposed Encryption Algorithm

During the past three years, interest in information security has been rapidly growing – not only for the safeguarding of fiduciary and other files having intrinsic value, but for improving access control over sensitive data, including personal information, while procedures are being upgraded to meet present and anticipated privacy requirements.

Vast amounts of money and high-grade talent have been expended in defining and developing more secure systems. Those who have studied the problems thoroughly are among the least complacent about the adequacy of their solutions. Systems once thought highly secure are viewed as readily penetrable.

One basic tool that is clearly definable and has broad applicability is the encryption of data into cipher while in transit through nonsecure parts of systems to make it less readily accessible to unauthorized users.

The proposed federal standard algorithm provides hard cipher. Herbert Bright believes that, carefully applied, this algorithm will be economically infeasible to break, so that only loss of access control over key or plain text will be realistic cause for information security breakdown.

By Herbert S. Bright

Special to Computerworld

An exact software simulation of the proposed federal standard algorithm for data encryption recently published by the National Bureau of Standards (NBS) [CW, Aug. 25] is being made available by Computational Planning, Inc.

The simulation is seen primarily as a test tool for users in and out of government who are deciding whether to apply the algorithm.

The NBS announcement stated that "data may be protected against unauthorized disclosure by generating a random key and issuing it to the authorized users of the data. The cipher that has been produced by performing the steps of the encryption algorithm on data using a particular key can only be returned to the original data by use of the decryption algorithm using the identical key.

"Unauthorized recipients of the cipher who may have the algorithm based on a user-generated key thus provides a basis for compatible cryptographic protection of computer data while preventing unauthorized use of the data in cipher form."

The proposed standard also stated that "only hardware implementations of the algorithm . . . will be considered as complying with the standard."

The user tests could involve a broad array of uses of cryptographic techniques, but we at Computational Planning expect the one of widest interest to be the checkout of cryptographic methods in application programs and procedures without requiring access to other than general-purpose computing hardware.

Other possible applications of the software algorithm could include:

- "Indirect encryption" by generating a binary stream which may be combined with a data stream to produce cipher. According to the proposed standard, "The cipher produced with the latter technique has the same high degree of cryptographic protection as the cipher produced if the data were entered directly into the data encryption device."
- Generation and test of encryption checkout data for designers, maintainers and users of encryption hardware.
- Protection of data where economically feasible and compliance with the proposed federal standard is not applicable. The cost per encrypt or decrypt of a 64-bit data element, using a large-scale machine and a preprocessed key (i.e., with prestored key schedule tables), will be less than .1 cent at typical service bureau prices.

Convenience Features

The encryption package contains certain convenience features, including:

- Maintenance of a preprocessed key pool. (Key schedule tables from the last eight keys processed are stored for immediate use. On each entry from a CALLing program, the routine checks to determine whether the key currently being presented to it is the same as any key that is in the current pool. If so, it bypasses the key calculation; otherwise, it processes the current key to generate tables replacing those least recently generated.)
- Execution of the odd-parity check on key transmission (specified by NBS to be optional under the standard) under selective control of user-set switch.
- Conversions between octal and hexadecimal notation for convenient visual checking of tests expressed in hexadecimal digits when using software/hardware complexes that do not support hexadecimal (e.g., IBM Fortran "Z" format) notation.

The cryptographic algorithm capability is being made available for several machines in an extended version of the Beef2 nonnumeric language-extender software package.

Beef2 is a library for performing character- and bit-string data element handling in Fortran and Cobol programs that are themselves written in conformance with the corresponding standards or for use in support of Assembly language or any higher level procedural language that can CALL subroutines.

NBS has developed two sets of test data for validating implementations of the algorithm. What we have called Test A is a set of 24 64-bit key/data pairs designed to demonstrate the power of the algorithm by showing the large effects on cipher of small changes in either data or key and the behavior of the encryption process on a variety of bit patterns.

Test B is a set of 19 key/data pairs generated as pseudorandom numbers and chosen because the corresponding 19 encryptions were found experimentally by NBS (and confirmed independently by us) to reference at least once each of the 256 entries in the "S-box" substitution cipher tables.

Correct execution of Test B (in which all cipher produced correspond to presumably correct cipher from a different implementation and in which all of the S-box table entries are referenced at least once) provides a high order of confidence in the correctness of encryption for any values of key/data.

When an encryption/decryption process has been shown to encrypt correctly a well-chosen set of key/data pairs (such as in Test B) and has been shown to recover the original data intact by decryption of the corresponding cipher, we feel the process is ready for test use.

Results of exercise of the first two Beef2 cryptography extensions released, executing Tests A and B as described above, are given on the accompanying tables. In each version's test the column headed "Cipher (Encrypted)" gives the result of machine encryption.

It may be seen that, in all cases of Tests A and B, both machine versions give results identical to those given by NBS.

Bright is president of Computation Planning, Inc., Bethesda, Md., which developed and markets Beef2.

	KEY ---	DATA ----	CIPHER (ENCRYPTED) -----------
		Test A	
IBM	133457799BBCDFF1	0123456789ABCDEF	85E813540F0AB405
	133457799BBCDFF1	5555555555555555	6F159B9AB784158C
Univac	133457799BBCDFF1	0123456789ABCDEF	85E813540F0AB405
	133457799BBCDFF1	5555555555555555	6F159B9AB784158C
NBS	133457799BBCDFF1	0123456789ABCDEF	85E813540F0AB405
	133457799BBCDFF1	5555555555555555	6F159B9AB784158C
		Test B	
IBM	7CA110454A1A6E57	01A1D6D039776742	690F5B0D9A26939B
	0131D9619DC1376E	5CD54CA83DEF57DA	7A389D10354BD271
Univac	7CA110454A1A6E57	01A1D6D039776742	690F5B0D9A26939B
	0131D9619DC1376E	5CD54CA83DEF57DA	7A389D10354BD271
NBS	7CA110454A1A6E57	01A1D6D039776742	690F5B0D9A26939B
	0131D9619DC1376E	5CD54CA83DEF57DA	7A389D10354BD271

Samplings for both Test A and Test B show encryptions handled by Computational Planning software on an IBM 370 and on a Univac 1108 are identical with data prepared by NBS.

"Cheese."

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Canadians Like Way System Spots Illegal Gas Tax Refund Requests

OTTAWA – A government department here is "very pleased" with the initial operation of a computer system designed to spot illegal attempts at gaining refunds of Canada's recent gasoline excise tax.

The 10 cent/gallon tax law, which went into effect June 24, allows tax refunds on gasoline used for business purposes.

The Excise Gasoline Tax Division of the Department of National Revenue has already rejected "a good deal of applications for excise tax refunds for various reaons," according to Fred Bourdon, head of the division's Legislative Interpretation Unit.

The computer programs were designed to spot any inconsistencies which could point to an illegal refund attempt, Bourdon indicated.

Bourdon would not divulge the nature of the system's checks and balances which the division used in writing the programs.

DP for the Dogs

No 'Love Matches' Allowed for Canines

By Catherine Arnst
Of the CW Staff

MOUNT PROSPECT, Ill. – The perfect match is not made. in heaven as far as selective dog owners are concerned; a computer service does the job for some canines here.

Date-a-Dog was started in May as a computer-assisted mating service for canines. The unique service is the brainstorm of Sharron Spitz, owner of Going to the Dogs, a pet and grooming shop. She had been manually matching studs (male dogs) with females in heat for her customers. Since her drawers were overflowing with requests, she decided to automate.

There are presently 400 studs in the data base. To take part in the service, an owner pays $10 and fills out a computer card listing 14 items about his dog, including age, breed, defects and attributes.

When a female is in heat (about two weeks out of every year) the computer is activated and a list of eligible males is produced from which her owner can choose.

Edgewater Data Processing does the matchmaking on a Honeywell 2020 disk system. It is the only service of its type in the country, Spitz said, and the response to Date-a-Dog has been "phenomenal."

The attraction of such a selective system is to "upbreed a dog; to breed out any genetic defects," Spitz said. A large number of show dogs are listed in the system, she said, because it is good advertising (an owner can charge a stud fee anywhere from $50 up to $400 for the use of his dog).

Spitz expressed some disenchantment with the system though: "People can drive you crazy. They're more neurotic about their dogs than about their children," she said.

Problems Arose

"There are a lot of different problems we hadn't thought of when we decided to computerize," she continued. "When we were doing it ourselves, we knew all the dogs. Now, people don't always fill out their cards honestly. Everyone thinks his dog is perfect and doesn't have any defects."

CW Photo by A. Dooley

Two members of an emerging market for DP services discuss the pros and cons of automation in the animal world.

A lot of interest has been shown in the service, which only covers Illinois, and there have been several requests for franchises. Spitz has no plans for expansion, however.

"I think Date-a-Dog is just a shot in the dark – it's a faddish thing. Of course, if it continues for four or five years, I would be proved wrong." she said.

DP Helps Find Lost Dogs

By a CW Staff Writer

FRAMINGHAM, Mass. – A computerized dog directory is in the planning stages here to aid owners who suddenly find themselves bereft of man's best friend.

By April 1, The Canine Communications-Control Catalogue will list the name, description, license number and phone number of all dogs in the Framingham area and eventually will be expanded to list all of the 126,000 dogs in Middlesex County.

When a dog is found, a dog officer only has to look up its license number, call its home and a family is brought together again.

The directory, said to be the only one of its kind, was the idea of Thomas C. Corkery, Middlesex County Coordinator of Canine Control. He estimated there are approximately 20,000 dogs lost per year in Middlesex County and 40,000 to 45,000 in the state.

When a dog is found now, it is held in a pound, at a cost of $2 per day to the owner, for up to seven days, after which it is put to sleep.

Corkery expects the directory to speed the return of lost dogs to their owners, saving them the holding fee and saving the county the expense of caring for the dog.

The program is being set up by the students of Keefe Regional High School.

Test Area

The plan so far is to use Framingham as a testing area. Students will visit each dog owner, collect all the pertinent information and then feed the data into the computer.

Christopher Cassidy, Keefe's computer coordinator, expects the program will be tape-based and written in ANS Cobol.

The printout listing each dog will then be reprinted in book form, and a copy of the directory will go to every dog officer, police department and "anyone else who requests one for a legitimate use," Corkery said.

Eventually, Corkery plans for the directory to be statewide and even envisions an exchange of similar directories between every state. "I've already received hundreds of letters from all over asking about it," he said.

And the dog owners? "They're delighted," he said.

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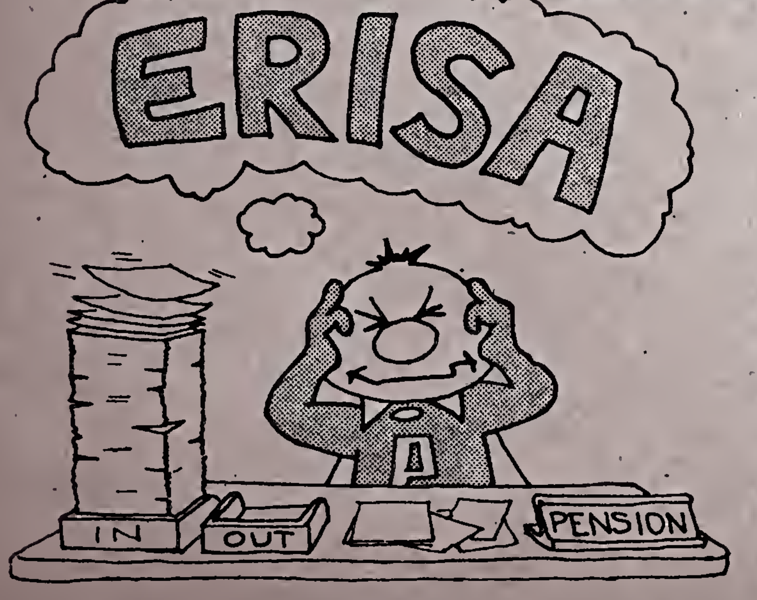

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CW 10/19

But Maybe Not This Civilization

Models Show Human Race Would Survive Nuclear War

By John Hebert
Of the CW Staff

WASHINGTON, D.C. – The human race – but not necessarily this civilization – would probably survive a "massive nuclear war," according to a recent National Research Council (NRC) study that relied heavily on computer simulation models.

Calculations from two atmospheric simulation models formulated at Lawrence Livermore Laboratory (LLL) indicated between 25% and 50% of the global ozone might be destroyed in the year following an 11,000-megaton nuclear blast, according to Dr. Mike MacCracken, deputy division leader at LLL's Atmospheric Geophysical Sciences Division.

The 11,000 figure was chosen arbitrarily; it is one-half the absolute total detonation capability the U.S. and the USSR reportedly have.

A 30% ozone reduction causes a 100% increase in ultraviolet radiation, MacCracken said, adding researchers have indicated changes of this magnitude could severely affect animal and plant populations and increase the incidence of skin cancer.

"For a transient period of about 10 years, life would be very difficult for people not in the immediate target area," according to Dr. Donald C. Shapero, NRC staff officer for the study, "Long-Term Worldwide Effects of Multiple Nuclear-Weapons Detonations."

"The recent studies indicated other considerations must be made in dealing with nuclear war and its effects," according to Ralph Smith, director of public relations at the U.S. Arms Control and Disarmament Agency (Acda).

The one-year study was undertaken by NCR at the request of Acda.

Noncombatants Warned

In transmitting the study report to Acda, Philip Handler, president of the National Academy of Sciences (NAS), warned noncombatant countries taking any comfort in the findings:

- Regions of high radioactivity could occur far from the detonation sites.
- Major and unfavorable climatic changes might occur.
- Were the U.S. and Canada involved, two-thirds of the grain in international commerce would disappear.
- Public health resources in the surviving nations could be severely affected.
- The economic, social and political consequences of the resultant worldwide terror cannot be predicted.

"Although the principal findings of this report are encouraging in a sense, this report further underscores the urgency of halting the proliferation of nuclear weapons and, as soon as possible, reducing the world's nuclear arsenal," Handler emphasized.

The computer simulation models used were part of a separate study, the Climatic Impact Assessment Program, which was on-going at LLL while the study was being performed, MacCracken said.

Each of seven NRC committees were assigned an area to study such as the effects on atmospheric and acquatic environments, and genetic, agricultural and other realms.

"The atmospheric study modeling was done by one of the seven research groups, but the resultant data was used for the biological groups as well," MacCracken said.

"We made rough estimates of ranges of variables, which the biological committees looked at" in assessing the effects from their standpoint, he said.

"All of the other studies used the data from the atmospheric model in some way to perform predictive calculations," MacCracken said.

Three Programs Used

There were three different programs used at LLL on one of its four Control Data Corp. (CDC) 7600 systems, he noted.

The first program dealt with the chemical makeup of the stratosphere to determine vertical profiles of atmospheric distribution or transport of radiation over a period of time from surface level to an altitude of 55 kilometers, he said.

A two-dimensional model provided the basis for the second program, detailing horizontal radiation effects at ground level, in other words, latitude and longitude, MacCracken said.

A third program outlined the long range increases in ultraviolet radiation and provided a basis to study the effects.

The NRC report is available for $8.50 from the NAS Printing and Publishing Office, 2101 Constitution Ave. N.W. 20418.

Funded by U.S. Government

Employment Offices Get DP Assistance

By Toni Wiseman
Of the CW Staff

WASHINGTON, D.C. – The Federal Government has begun funding the second part of a U.S. Employment Services project whose first part has yet to prove itself.

The House voted $20 million and the Senate $10 million as the first step toward implementating a five-year plan to install a computerized job-matching system in every state Employment Security office in the country.

The job-matching system will, in theory at least, work in conjunction with a currently operational job bank system.

The concept of the program dates back to 1968, when Richard M. Nixon used the idea as a key campaign pledge.

By 1970, 42 Department of Labor computerized job banks were in operation [CW, July 29, 1970]. Today, 40 states have job banks, but there are no hard figures on their success [CW, Aug. 20, 1975]. In fact, those connected with the program cannot ascertain if any workers have been placed through the system.

In 1974, the Comprehensive Employment and Training Act expressly called on the Secretary of Labor to "establish and carry out a nationwide computerized job bank and matching system on a regional, state and local basis."

A 15-member panel sponsored by the National Manpower Policy Task Force studied plans to expand the job banks into job-matching systems in 1974 [CW, Feb. 27, 1974].

The job bank currently in use in the state Employment Security offices lists openings available around the country. The heart of the system is a computer in Oklahoma which formats the listings and produces microfilm copies which are then sent daily to each state office.

The job-matching operation would mesh this listing with another bank consisting of people looking for work, categorized according to their skills, willingness to relocate, etc.

The matching would start on a local basis, but would be expanded nationwide if there was an unusual job in a state but no one to fill it.

The fact remains that only the semicomputerized job bank is running at present.

The job-matching portion has not yet been instituted because "the mechanics of it are very, very complicated; we don't know how well it will work in terms of job matching," according to Jack Hashian of the Department of Labor's Manpower Administration.

There are currently pilot matching programs, in Utah for instance, "but they're not widespread and Utah is so small it doesn't [represent], because of its population and work force, a really good pilot for us to emulate," he noted.

Batch, On-Line Matching

The matching could be done both batch and on-line, Hashian said. It would initially be done in a batch mode "because of the relative unsophistication of the set-up, but eventually the idea is for a guy to walk in and, in real-time, his characteristics would be fed into the terminal and bingo the job," he explained.

"And if there's no job, he would be fed in every day to see if anything comes up that matches his needs and skills."

Hashian stressed the need for a mechanical bank since "now we just write the information down on a card and, quite frankly, that card is just filed if there isn't a job available that day.

"In most state operations, and most are crummy, there isn't the personnel available to keep searching the manual files, so the poor guy thinks he's in line for a job and he never hears from the office again," he said.

Hashian is hopeful that, once the system is running, it will mean a tremendous increase in the number of people using the employment service, "but they have to put the computers in first.

"The whole hardware question is the important thing at this moment," he said. "That's why the money is needed."

Hashian noted the planning is "going ahead full blast for the job-matching system, but frankly it's going to take years and years for that to develop into something highly useful, to match the ideal of the concept."

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Federal Agency Uses DP In Selecting Food Vendors

By Nancy French
Of the CW Staff

PRAIRIE VILLAGE, Kan. – The Department of Agriculture's Commodity Office here is using remote batch-processing equipment and computer models to analyze bids and select contractors for food items for federal programs such as the school lunch program.

"When you're buying for the whole county and ordering by the car lot, analyzing the bids to determine what is really the lowest priced offer is complex enough given all the variables involved such as package size, multiple delivery points, transportation rates and so forth," Pat Weaver, systems analyst for the Agricultural Stabilization and Conservation Service Data Systems Division, pointed out.

However, because commodity prices fluctuate so much from day to day, analysis must be completed and contracts awarded 24 hours after bids are opened, vastly compounding the difficulty, she said.

How System Works

According to the way the system works, suppliers who wish to bid on a given contract must submit their bids by 4 p.m. on the date due. At that time, commodity analysts open and review the bids.

Sometime before the 4 p.m. deadline, operators already will have keypunched the orders placed by each delivery location. Then, after the bids have been opened, two or three operators work steadily for about two hours keypunching price information and the contractors' delivery capacities from the bids submitted.

When cards are completed, they are fed into a Mohawk Data Systems 2400 remote batch terminal which transmits the data over dedicated lines to a Univac 1108 system in Fort Collins, Colo.

The processing is done there, and at about 9 p.m. the results of the competition are printed out in list format on the 2400's printer in Prairie Village.

The following morning, the results are reviewed by the commodity analysts for a final decision. Although the computer model may have found the optimum solution, analysts may decide the prices are too high and postpone purchase of certain items, John Bussone, systems analyst at the Prairie Village center said.

After the decision is made to buy, wires are printed out on the 2400, detailing the purchased items, the destination points and so forth, and these are sent via Telex to the vendors involved.

In a typical bid situation, 50 to 100 contractors submit proposals to supply food products to some or all of 100 to 800 destination points, Weaver said.

Delivery costs may be included in the offer or added to the offer price separately prior to analysis.

Although any firm may submit a variety of bids which in total might exceed its production capacity, the Commodity Office would not wish to make awards that do. So, to assure this does not happen, each firm must provide production-capacity information by time period, package size and so forth.

The model then determines the set of contract awards that minimize the total purchase cost while meeting the delivery requests made by all destinations and staying within the production capacity of each firm.

The most frequently used approach to finding the least cost solution is a revised version of the Simplex linear programming technique, developed from a Univac system, Bussone said.

While it is most flexible, it is also time-consuming. So, in many situations, a transportation algorithm can be used to obtain an equivalent least cost solution, he said.

However, in cases where the destinations have not submitted their request for commodities in multiples of fixed delivery-unit size – the standard 100,000-lb car lot – an integer linear programming method is used to assure car lots are not split between vendors.

In this case, the solution is not always a "least-cost solution."

A Dubious Distinction

PARIS – A computer study conducted in France decreed that this country's 52.5 million citizens are not the rugged individuals they are reputed to be.

Not only did the survey provide a detailed statistical profile of the French, it discovered the prototype of the average French person and named her Madame France.

This honor was bestowed on 28-year-old Jeanette Avelange, a statistician in a milk plant office, for the distinction of being completely average.

She has light brown hair, grew up in a small town in northern France where she attended mass every Sunday and graduated from high school.

She was pregnant when she married her husband, Jean-Claude (a truck driver, who said, "I am proud of my wife" when told of her new title) and is the mother of two children.

Even her opinions fit the computer profile. Madame France considers herself a Catholic, but does not go to church. She takes contraceptive pills, but is strongly opposed to abortion, which she calls murder. She thinks crime is a growing problem in France, but opposes the death penalty.

Avelange's wish for the world is that "everybody would be happy, no poor, no rich."

The profile of the typical French person was based on interviews with 2,000 men and women by the French Institute of Public Opinion and reflects what one newspaper termed "the increasing French propensity for self-identification by computer rather than through the thoughts of Descartes, Camus or Sartre."

The average size of men is 5 ft 6 in. and 154 lbs and of women (51% of the population), 5 ft 2 in. and 130 lbs.

The average family has two children and lives in a detached home in an urban area other than Paris. While 84% consider themselves Catholic, slightly more than half do not go to mass and do not confess their sins to priests. Priests ought to have the right to marry, according to 70%.

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Editorials

Unearned Revenue

AT&T's determined campaign to force unnecessary protective devices onto data communications and other users has at last been stopped dead in its tracks by the Federal Communications Commission (FCC) [CW, Nov. 12] .

There is no doubt that the body will still develop some last-minute regulatory reflex actions, but after that it should die a well-deserved death.

But that should not be the end of the matter. The Data Access Arrangement (DAA) was a rip-off.

It was conceived as a marketing ploy to salvage some revenue for the Bell System after the FCC said it saw nothing wrong with connecting noncarrier equipment to the dial-up telephone network.

The justification for the DAA and other connecting arrangements was the perceived harm AT&T always saw lurking in the shadows. But it never quite managed to transform that perceived danger into a tangible threat with specific examples.

In one recent last-ditch effort, AT&T attorneys attempted to show filmed sequences of the havoc that could be caused when 110 volts was applied directly to an enclosure housing some terminal equipment. The examiner hearing the AT&T case became so insensed at this far-out example, he threw out the Bell "testimony."

That incident was typical of the way AT&T tied up numerous regulatory proceedings since 1972 attempting to justify its case claiming harm to the network.

In addition to the regulatory foot dragging, there is a larger unresolved question. Under the interconnection tariffs, users were required to pay monthly rental to the phone company for their DAAs. Even though a single DAA was not a costly item, averaging less than $10/mo, there were large companies that had rooms full of the boxes.

Now that the FCC has ruled that the necessary protection can be built into modems and other equipment, some thought should be given to reimbursing users for the cost of the DAAs.

We propose local phone companies be required to give users a credit up to the total each has paid for its connecting arrangements through the years. It is inconceivable that the phone companies be allowed to keep this revenue just as though they had earned it.

Interested in Benson's Book?

For several years, Miles Benson has been writing columns for *Computerworld* about real projects which have failed for any of several reasons: mangement shortcomings, technical problems, etc. One of these columns is on Page 15 of this issue of CW.

It has been suggested that CW compile these articles, which number about two dozen, and ask Benson to update them where appropriate, and offer them to our readers as a package.

To help us measure reader interest in such a book, please use the coupon below. This is not an order form: please send no money.

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'Must Be IBM's Involved in Another Lawsuit . . .'

Letters to the Editor

Manager Who Can't Get System To Work Should Polish Up Resume

Ed Tunstall's comments about NCR and whether they are in the computer business are truly remarkable.

In the first place, if I had a DP or operations manager working for me who was unsuccessful in making a computer work over the course of two years, and then, instead of getting rid of the equipment, wrote letters to the editor, I would ask him to polish up his resume.

As a fifteen-year user of NCR equipment (the 304, 315 and now the Century 200), I would have to disagree that "NCR never really entered the computer field" or that "Grosch was right all the time."

Here at Midland Cooperatives, we average about 20 hours per day or over 430 hours per month on our 128K Century 200.

During 1974 and 1975, we have averaged three hours and 20 minutes of downtime per month, including reruns because of hardware failures or problems. That comes out to .77% downtime – less than 1% of the compute time.

I am not sure what Tunstall or his operators are doing to deserve the problems he is experiencing, but there is no question in my mind about the kind of uptime that is typical among the Century user base.

Don Masterson

Minneapolis, Minn.

NCR Performance Exceptional

In response to the letter from Ed Tunstall titled, "Grosch Right: NCR Never Entered DP Mart" [CW, Oct. 15], I would like to interject our experience with NCR equipment.

We run orders three times a day on our machine, and in two years we have never missed a day printing orders.

We started with an NCR 100 and upgraded to an NCR 101 during this time period. I think this exceptional performance reflects the quality of the service we have gotten from NCR.

Gary Oliver

Chattanooga, Tenn.

Professor Should Enter Real World

The article by Jack M. Wolfe titled "Women Don't Want Promotions" [CW, Oct. 15] was absurd. Perhaps the professor should get out of the cloistered halls and into the real world of business.

I gravely question his so-called "statistics." My experience over eight years in DP would strongly contradict his assertions.

First, women are likely to resign when their husbands are transferred to other cities, but women are less likely to change jobs for other reasons, e.g., low salary, poor working conditions.

I have never in eight-years experience known a woman to return to a position for which she was originally trained, such as teaching, etc., as Wolfe suggested.

Furthermore, I have never known any woman in DP that did not want positions of responsibility, supervisory or other. Special hours are more likely related to nonmanagerial jobs than not. My managers never accompanied my project team to a site for graveyard-shift time.

In conclusion, I can only suggest that Wolfe's article can be based only on opinion. My experience would indicate none of it is true. Perhaps, he should interview some women the next time.

Mary E. Lowe

Respect for Single Life Needed

Is the real issue that "Women don't want promotions" or that women have to make choices? Yes, women put their families first and, of course, that means occupations second. Men have always been able to put occupations first and are respected for it.

Women who make it in a supervisory capacity are either super strong physically and mentally – handling two occupations simultaneously (at home and on the job) or single without families.

Until single life is respected as greatly as the married way, I think women will continue to put careers second.

Carol Mather

Cedar Rapids, Iowa

Depreciation a Reality

Two statements in the Reader Commentary by George Warren on the Cash Assets of IBM [CW, Sept. 17] suggested to me that, not only is the competency of Warren to interpret financial reports, but also the editorial competency of *Computerworld*, to be questioned.

The statement in the latter part of the article, "Much of this revenue is now charged to depreciation, rather than being added to earnings" implied that IBM could ignore the wearing out of materials originally recorded as assets. They might just as well record all current expenses as assets rather than using them to "reduce earnings."

The other statement was "IBM receives about 46 cents of gross income from each dollar invested in plant and rental machines, but only about 8 cents from each dollar held in cash or marketable securities." I assume that the 46 cents is before the expense of operating the business, just as the 8 cents is before the cost of managing securities.

Again, the wearing out of materials was ignored, to say nothing of the expense of operations.

Jack Hudson

Waco, Texas

ACM Minneapolis

"The best committee I ever worked with," said one happy official. "They came up to me and *asked* to be helpful," said another. It wasn't all peaches and cream, but the recent annual meeting of the Association for Computing Machinery certainly was one of the best organized in the decade: And the second largest – only the Silver Anniversary in New York, 'way back when only a few of us distrusted the FBI, was larger.

If you came early, you soon discovered that the sidewalks (and the sidewalk cafes) had been rolled up quite early Saturday night and would not be unfurled any time Sunday. Shrewd visitors went Greek dancing far out beyond the brewery, but the committee wasn't much help on *that* one! SIGElbow, devoted to relatively sober socializing, filled the gap for the innocent.

There was a plethora of panels and a relative scarcity of refereed papers. I was too busy on committees and boards to check out many sessions, but noted that the panels on software agonies of various sorts were well and fervently attended, while the social-significance stuff did poorly. This, in spite of very heavy student registration. The citizenry and the economy can go blithely off down the road to EFTS and monopoly and general helplessness, for all most ACMers seemed to care – but the mid-1975 definition of structured programming and the latest greedy claims of the microprocessor clan played to packed houses.

Ah well, 'twas ever thus in the computer trade. The chess matches were sellouts. IBM brought a 5100 to the student lounge and was absolutely inundated; the computer art was pretty good. The Association tries nowadays to have all its sessions and all its housing under one single roof. Naturally, since this was done in Minneapolis, the weather outside was scrumptious; it only rains or snows when attendees have to run back and forth between split locations!

The most exciting scene of the meeting was, paradoxically enough, after it closed. The Council met all day Thursday (Oct. 23) and debated for almost two hours a resolution supporting the Russian Valentin Turchin (pronounced terCHIN, I found out) in his struggles to emigrate. A healthy if somewhat variegated assortment of supporters prevailed very handsomely in the end; the Hardnoses and the Hardhearts were cut off at the pass. But it was done in reasonably good spirits, and the wounds were not too deep. Charges that Turchin was not really a computer scientist were refuted by inquiries organized by Dan McCracken; wranglings about who paid Turchin's dues were suppressed; the presiding officer's fears of the Internal Revenuers were ignored; we Bleeding Hearts triumphed. Word will go to the USSR and to that other Siberia, the State Department, that the ACM Council views with concern. I'm *very* glad.

Herb Grosch

Ignoring Problems Common in Data Base Selection

The Taylor Report
By
Alan Taylor, CDP

Did you know data base users can find themselves paying two or three times more for data processing than nondata base users?

That there is no way of safeguarding either the future efficiency or security of data base use?

That both the two hopes for the data base future – distributed and relational systems – have major and often ignored problem areas?

And, worse than all of this, did you realize that no effective escape hatch is currently available to data base users who want to get out from under whatever they are doing and move to a new data base system? In short, that data base users are by and large locked into the vendor they originally selected even when matters go wrong?

Data base salesmen will, of course, fight all of these contentions, but each of the examples above comes straight from the biggest-ever working conference of data base experts, held by the National Bureau of Standards and Association for Computing Machinery in Fort Lauderdale, Fla. a couple of weeks ago.

The fight data base salesmen will put up to prevent such real problems from being properly examined was marked as *the* user problem by Dan McGraw, Minnesota's assistant commissioner of administration, in the last moments of the conference.

"Overselling by ignoring problems" is occurring, McGraw claimed, adding users need more than anything else to know data base problems really do exist and are serious.

But neither McGraw nor anyone else at the conference denied data base systems have their uses. It appears, therefore, that what is needed is user awareness of the problems so they can evaluate them and decide which data base method is most suitable, perhaps on the basis of which has fewer problems, rather than which offers the most brownie points.

Escape Hatch Needs

The hopeful user who is ready to consider data bases, it appears, should work out the various times when and reasons why he might want to change data base system suppliers. No one I heard recommended that a user tie himself into a single supplier.

Changing hardware and technology are obvious, almost universal reasons for avoiding lock-in. After all, data base systems will need to continue once set up and users certainly can't be expected to remain with obsolete equipment. But there are also other reasons to look for an escape hatch.

For instance, if the hardware or software of the data base system fails to give the price/performance (as may well happen), the user may look for an escape hatch. But the forecast price/performance will always be related to expected usage of the data base system, anticipated growth, accuracy of original policy requirements, current legal conditions, etc.

Any of these factors can change almost overnight – and without anyone having necessarily goofed up. The sudden result may be an overloaded data base system or one that simply turns out not to be flexible enough to provide the information required.

Some data base methods are reasonably simple to set up, but very hard to change once set up. That is a serious enough problem that may well push a change of data base system suppliers.

A user should therefore be aware of the possibilities of change being wanted at several times:

- Before the system installation is completed (if installation costs rocket, for instance).
- Shortly after installation is completed (if use patterns, policy flexibility, etc., are inadequate, if security fails or if operational costs jump).
- When software technology permits order-of-magnitude improvement (within three or four years).
- When hardware technology permits order-of-magnitude improvement (also within three or four years).

All these are sufficiently certain so data base planning should have specific, prefinanced, contingency plans for each separate case. The way in which matters would be organized both for the original installation and the operation of the data base would take into account the need to keep the escape hatch open. Because it will be used sooner or later.

Another major area of data base systems in which real problems exist is the efficiency area. In ordinary batch work, we can work out the time and effort required to handle known volumes of work. But to do this we use known file structures and processing timings.

In on-line work, our ability to even control response time is hampered by the great increase in the amount of housekeeping per transaction. Our results have often been off by two or three times, even when we know the hardware and the system.

Effectively, this has cut the real capability of the system to one-third of its expected capability where response time has to be maintained, as often occurs. It can be cut even more drastically if, at the same time, the work volumes have increased, because overhead often increases quicker than the volume change.

Solving Efficiency Problems

But under on-line systems the user situation can be saved by reducing or even eliminating background processing, putting the on-line work into priority categories (and dropping some right out), etc. No such escapes from inefficiency are available with data base systems – at least not centralized ones. The whole idea is to keep everything under one roof – so there is nowhere to shed the load to!

Nor has the art of forecasting accurately beforehand improved since the on-line days. If anything, it has gone down. According to the advanced technology committee at Fort Lauderdale, forecasting can't be expected to come up again in the next five years!

Yet, as the audit committee said, there is still a need for justification before going into data bases. So what is a hopeful user to do? How can he justify without reliable forecasts?

As far as I can see, he simply has to accept the fact that the data base system will really have only one-third the apparent capacity. Or, alternatively, he must accept that he is gambling with the life blood of an organization (and without a good escape hatch). (I can also see data base system job-hopping becoming a serious problem if too many users elect to take the gamble – but there it is.)

Taking Gambles

A user justification that cannot plan for a system being fully loaded when apparently only one-third of the system used is – at the present – just a gamble taken in the face of prior failures. Users should also know this.

In addition, users should be aware of the situation with regard to data base controls. What has happened is that we have a vacuum situation. At Fort Lauderdale, it was accepted that inevitably the auditors (internal and external) would be dragged kicking, screaming and counting their fees into the data base control area, since no other group was available. But they simply are not there yet.

And there are distinct signs that when they do come, the auditors will insist upon some fundamental changes *before* they are prepared to exercise the controls. Fees won't be their only demand, you can be sure of that. Before they accept a control function, they will have to satisfy themselves that the system is controllable.

One auditor at Fort Lauderdale claimed such control is currently available – provided the auditor has full understanding of advanced communications, the latest implementations of operating systems and data base systems, etc. Others wanted the technologists to adapt the data base systems to a lesser degree of genius among their auditors by, for instance, having standard languages and excluding the data administrators from access to the data base.

Control Not a Reality

Thus it can be seen that data base control is still a long way away from being a present reality. Of course, your particular data base may not need controls very much. But then again it might.

The hopeful user will have confronted the control problem that currently exists – and won't even start working on the benefits of data base systematization until he knows (and everyone around him knows) the importance of understanding what the control problems are.

There are other problems also. Data base sizes, for example, can drastically impact user decisions. Comparative activity counts now being used are simply not comparable. Consideration of data base handling under system changes and reorganization are vital.

But these few will do to illustrate the real message from Fort Lauderdale – beware of overselling, because provable facts just can't be given. Not yet – and not for the next five years!

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by Glenn ImObersteg

Another 'Project Which Failed'

Technology Flounders When Timing Off

By Miles Benson

Special to Computerworld

This is the story of a project that met all of its design goals with flying colors – and still failed.

Papers were published on it, and both the industrial and academic worlds agreed it was well ahead of competitive projects in its field. But it still must be considered a failure.

Why?

The Sociology of Computing

Let me tell a little of the story before I answer that.

When Sally Turlock first arrived at Softli Paper Co., she thought it was the greatest place to work ever. Softli was quite happy to let her continue the line of research she had begun at Wisconsin Western Tech. (WWT).

WWT at that time was deep into computer-aided instruction (CAI), and Sally had built a pilot program there which showed a great deal of promise. Softli felt CAI could be useful in its in-house training program, which required a lot of individualized instruction, and a half-built CAI system was too good not to pick up and go with.

Sally set to work with heart and soul. She was well up on the CAI literature, knew the strengths and weaknesses of existing systems and sprinkled in some new ideas of her own which made her approach to CAI unique and worthwhile.

Other CAI systems made it easy to present lessons to students, once the lessons were built. Sally's had facilities for building lessons, as well.

This double-barreled approach gave promise of overcoming some of the major obstacles to CAI acceptance, especially the natural resistance of the educational community to new things and the enormous difficulty of constructing lessons in the new medium.

As Sally's CAI system emerged from the drawing board into code and from the coding pad into hands-on-the-remote-console checkout, Softli grew more and more excited. When you hire several thousand people a year, scattered throughout the year, and you need to give all of them a basic training course and some of them special follow-ons, you have a training problem that doesn't fit the standard fall-winter-spring drill of PS 111.

You can't save up people until you have enough to make it worthwhile to give a course without wasting a lot of people time. CAI seemed ideal for Softli's situation – so much so that it began thinking about marketing the system outside.

Made Big Splash

Sally's CAI system emerged from the checkout phase with a resounding and positive splash. At a quiet, in-company acceptance test, she made the terminals fairly dance with a sample lesson construction and simulated student session. She had built a minicompany-orientation lesson as a demo program, and Softli's supervision was wowed by seeing the corporate name spread in new ways across a CRT screen.

In fact, it went so well that Softli called in the press. Softli and CAI spread via the wire services clear across the country.

The corporate name on the CRT screen made business pages and education pages from Tallahassee to Tacoma. It seemed like a giant step forward for CAI. The technology had made major progress, and public and educator acceptance would be furthered by the publicity.

At least, that was the idea.

You may be waiting, as you read this, for the bottom line. I mean, with all the glory, where's the "Project Which Failed," right?

It's a little hard to see what's wrong with this picture. Especially if the technology is right, and the politics is right, and the timing is right.

Unless you've followed the history of CAI.

What's wrong with this picture, CAI fans, is that the *economics* are not right. You may be able to build lessons, and give lessons, and impress people, but you can't do it cheaply.

Terminals are expensive. Phone lines are expensive. Computer time is expensive. Lesson preparation is expensive.

Those expenses are coming down – Sally's well-thought-out design helped, especially with the latter – but they are still not competitive with traditional teaching methods. Except, perhaps in unusual special education situations.

We're getting a little ahead of the story. Softli didn't know all this yet. It wasn't until the company beefed up Sally's orientation program and put it on-line for a few months that the economic facts of life began seeping in.

And, given the amount of publicity it had received, it was several more months before Softli decided to pull the plug on CAI.

Sally, meanwhile, tumbled too fast from her ego pinnacle. What had been major glory turned to mundane failure, and her spirits plummeted with the project. About a year and a half after the press demo, an offer came to her from a nearby software house. She took it.

Normally, that would be the end of a "Project Which Failed" story. Programmer meets program. Programmer falls in love with program. Program fails, and programmer identifies with failure. A familiar pattern.

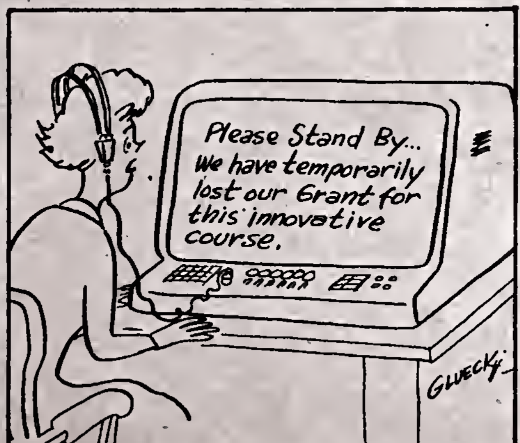
Tale Has Postscript

This story, though, has a postscript. CAI is, in a worldly sense, still out there. As computer costs go down, traditional educational costs go up and CAI technology beats down a few more barriers, the economic penalty is fading away.

A paper on Sally's system, trumpeting the return of CAI, was recently published by a couple of Softli employees. Softli still believes in Sally's system and would love to breathe life into it again. The paper spoke glowingly of her technology and drew some attractive cost vs. chronology graphs which made economic feasibility look to be only a couple of years away.

But even in the attempts to revitalize a "Project Which Failed," there was still a lingering taste of bitterness.

Sally's name was nowhere to be found in the article. When it came to fame, possession of the program appeared to be the proverbial 9/10ths of the law.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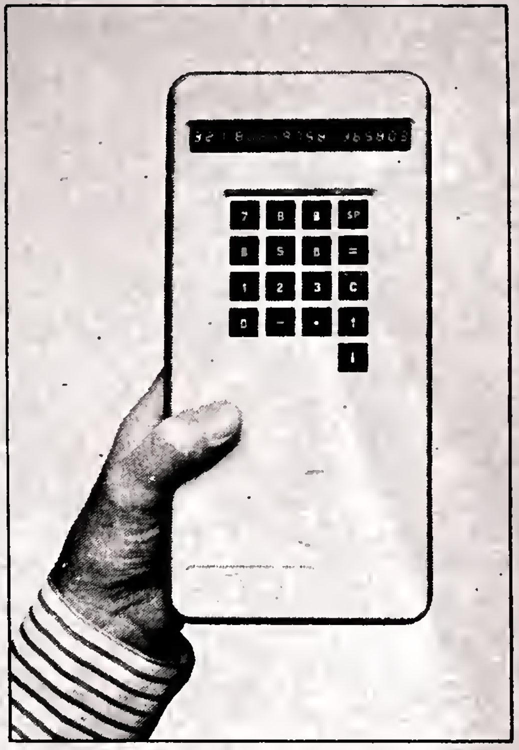

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Not Form But Substance the Issue at 4th and Main St.

By Gerald H. Larsen

Special to Computerworld

Reader Commentary

Once upon a time there was a comely young lady named Freeda-Roy. And she was young and very beautiful and heavily perfumed and carried out her profession on the corner of 4th and Main St.

One Friday evening, on his way home from work, Honest-John passed Freeda-Roy's corner and, having evaluated her obvious charms, decided a later train could be arranged.

Freeda-Roy and Honest-John dallied in a nearby dwelling, and Honest-John's enjoyment was great indeed.

Some four weeks later, Honest-John began to discover a certain faultiness and pain in the operation of certain parts of his anatomy. A visit to his friendly local doctor confirmed that Honest-John had acquired a substantial quantity of Neisseria Gonorrhoeae or, to wit, VD.

Enter the Law

Incensed at this inhumane assault upon his person and recognizing that its source was Freeda-Roy, Honest-John immediately called his lawyer (LC-John) and sued Freeda-Roy. Fortunately, Freeda-Roy had heard about lawyers and she, too, obtained counsel (LC-Freeda).

Both attorneys, being men of the bar and not given to acts of frivolity, entered the dispute with all of the seriousness, singleness of purpose and due regard for accumulated billing hours as is their customary wont to do.

Many depositions and investigations later, they discovered the crux of the lawsuit centered about whether the transaction between Freeda-Roy and Honest-John was one for "services" or "goods."

LC-Freeda reasonably maintained Honest-John had no grounds for suit – the transaction was clearly one for services and, since Freeda-Roy had acted with care and diligence, no further liability could be attributed to her.

LC-John, on the other hand, held a completely different view. The transaction, he maintained, was not one for "services," but one for "goods," tangible goods, real personal property, etc.

He did not deny that services were involved in the transaction, but, in fact, the transaction was one in which goods such as lipstick stains, perfume and, in this particular case, a rather large quantity of bacillus were exchanged between the two parties.

LC-John contended that, since this was a transaction for goods, Freeda-Roy was liable for any damage which might be caused as a result of the transaction.

A trial date was set in keeping with the importance of this matter and the amount of debate which would be required to settle it. This date was approximately four years in the future.

During that time many meetings were held between LC-Freeda and LC-John in an attempt to resolve their dispute. "Services!" cried LC-Freeda. "Goods!" cried LC-John. So the argument continued.

And the billing hours grew very great, and the pocketbooks of Freeda-Roy and Honest-John grew very small. And they grew sore afraid. It was now over two years since Freeda-Roy and Honest-John had even spoken to one another, their respective legal entanglements having been left completely in the hands of their attorneys.

They Meet Again

One Friday, as Honest-John was on his way home, he passed the corner of 4th and Main St. where Freeda-Roy was working the world.

"Hi there, Freeda baby," Honest-John said as he passed the corner.

"Well, if it isn't Honest-John – its been a lot of time, honey. You got any idea what's happening in our lawsuit?"

"No, but I keep getting lawyer bills regularly. Tell me, Freeda-Roy, do you think our little adventure was a transaction for goods or was it a transaction of services?"

"Well, Honest-John, let me ask you this – was it good the first time?"

"Yes."

"Was it good the second time?"

"Yes."

"Then I guess it was a transaction of goods!"

"On the other hand, Freeda-Roy, when we met that Friday evening I told you I was looking to be serviced, and you said you had the finest services in the world."

"Services, schmervices, honey, I call it LOVE."

A knowing smile passed between Freeda-Roy and Honest-John. It was going to be another late Friday night.

Moral of the Story

The morals:

- Good services are usually less taxing than serviced goods.
- The form of an argument is usually the substance of some debate.
- Forms and debates make lawyers wealthy, but substance is that from which stars are made.

The postscripts:

- It is reasonable in an "opinion piece" for an author to use some license in language in an effort to be communicative. Such license hardly seems appropriate in a tutorial.

Roy N. Freed's use of the words "software program" in the article, "Definition of 'Software Program' Can Vary" [CW, Oct. 15] is extremely strange and not in keeping with any known form of usage in our industry. The terms "software" or "program" or "computer program" or "computer software" are all potentially appropriate symbols for that to which Freed refers.

- Freed refers to terms used in our industry as "jargon" rather than as "terminology." Unfortunately, the word jargon carries a strongly negative connotation not at all in keeping with the diligence with which we pursue definitional precision in almost every instance.

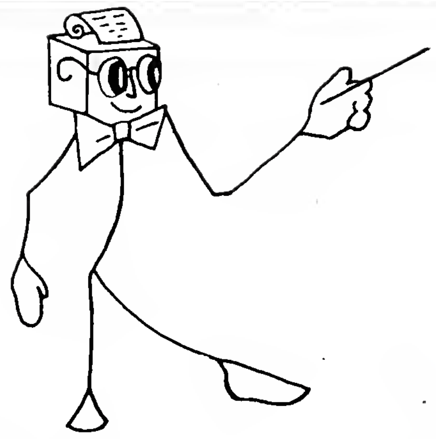
Simply because people outside the computer field do not always understand our terminology does not change that terminology into jargon. Res ipsa loquitur.

- The "IBM License Agreement for IBM Program Products" [Z120-2065-2 (U/M-025)] is an extremely well-written agreement which at no time confuses a program product with the media on which that program product is stored – as claimed by Freed. Read the agreement for yourself. Magnetic tapes aren't programs – but you gotta know that terminology!
- The discussion in Freed's article concerning whether software is "goods" or "services" speaks clearly for an immense sadness which covers our entire nation.

To the extent that we waste time and energy in arguments of form rather than substance, we contribute nothing to the universe. Instead, we devote ourselves to "getting around the law" rather than making the law into something of quality and substance.

Something of principle. Perhaps if we can return to substance rather than form we can once again see those things outside ourselves which are the reason for us – and computers.

Larsen is president of Unicorn Systems Co. in Los Angeles.



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'We've Agreed to Disagree'

Initial Study Group on DBMS Standard Hits Impasse

By Don Leavitt
Of the CW Staff

NEW YORK – The three-year-old study group on data base management systems (DBMS) standardization has reached "something of an impasse" and has turned to its sponsoring organization for help, according to study group Chairman Thomas Steele of Equitable Life Insurance Co.

Organized by the Standards Planning and Requirements Committee (Sparc) of American National Standards Institute's X3 technical committee, Steele's group was to determine the economic and technical feasibility of a DBMS standardization effort.

If the group gave standardization a green light, it was also to define precisely what it saw as a basis for standardization..

As part of its work, the group has studied numerous documents and proposals on data base, including the volumes published by the Codasyl Data Base Task Group in the early 1970s and these put out by Guide and Share, the IBM user groups.

The study group put out an interim report early this year outlining what it saw as the total DBMS environment, including a generalized schematic diagram of the architecture of a data base system and identifying some 40 interfaces with areas outside the DBMS itself.

Data Basics

Within that framework, the group has been attempting to write specific proposals on the DBMS and on the interfaces so Sparc could do its evaluation and make its recommendation to X3.

Unanimous Recommendations

The impasse has arisen, Steele explained, because "from Day One" the group made a commitment that it would not make a recommendation to anyone unless it was unanimous. "We have come pretty damn close to making a set of unanimous recommendations," he said. "There are only one or two things that separate the group."

Rather than fighting within the group, the members "have agreed to disagree" and reported to Sparc at a meeting last week that "it's probably appropriate to look for new blood," Steele said.

He feels that "to some extent" there ought to be a reconstitution of the study group to bring in "new faces, perhaps a new approach."

But that should not be a total rebuilding of all the current group has done, Steele emphasized. It should not be a new technical approach to the problem, but "just a willingness to start arguing all over again."

'Hung Up' on Codasyl DML

Specifically, he said, the group – despite its unanimity on much of what it wants to tell Sparc – is "hung up" on several points with respect to the Codasyl data manipulation language (DML) specification.

Some group members felt changes had to be made for these specifications to be acceptable candidates for standardization, Steele said. "Others felt the proposed changes were unacceptable" and, if included in the group's recommendation, they would make it unacceptable.

"So, we couldn't come to closure on that issue, and that's what we're taking to Sparc; just one or two things," he stressed, adding "It's not a matter of the committee being split down the middle" in the bulk of its recommendations.

How soon Sparc may act to break the impasse is unclear at this time. Typically that committee, which organizes and monitors the activities of various ad hoc study groups, hears a case at one meeting and "thinks on it" till the next meeting.

Steele said he expects "whatever [Sparc] decides to do will be deferred till

(Continued on Page 20)

Sycor Routine Adds to TAL II

ANN ARBOR, Mich. – The disk-based program library for Sycor, Inc.'s distributed processing systems has been extended to include a search-edit capability, according to a company spokesman.

The utility was designed to facilitate editing and maintenance of data files and is said to be particularly useful for Terminal Application Language (TAL II) source programs during program development.

The search-edit facility can copy or delete subsets of input files, insert records during file copy operations or locate and replace specified data within specified sets of records.

It can also list input files to provide record numbers in preparation for editor commands, Sycor said.

TAL II allows local inquiry/response and data entry on the company's remote batch terminal systems. It supports arithmetic operations, data movement, logical comparisons, table lookup, field justification and other basic DP functions.

The search-edit facility complements the system's backing of eight different sequential, random or indexed files or devices.

Used on the Sycor Model 340 with flexible disk option, the Model 350 or the Sycor 440, the complete library, including TAL II and the search-edit feature, is available on diskette for $35 from Sycor at 100 Phoenix Drive, 48014.

In Four DP Areas

'Assist' Aids Large IBM Users

SAN FRANCISCO – Assist from Advanced Software Techniques (AST) is described as an operational environment enhancement for large-scale IBM 360/370 users which provides support in four major areas: operational efficiency; real-time system problem resolution; system efficiency; and critical resource monitoring.

The package provides functions not available through OS, VS, Hasp or ASP and the support can be used under TSO as well as in batch mode operations, the vendor said.

Assist services provide "an efficient way of dealing with day-to-day operational procedures" including disk, tape and data set mangement and control of the jobstream during shift turnover.

Other operator supports include display of outstanding console messages, of CPU activity and of the 10 most active jobs.

Assist supplements existing operating system commands and allows users to work on problems that "cannot be addressed" otherwise. These problems include enqueuing conflicts, direct access reserves, jobs "hung" in execution, jobs or the system in a loop or running slow and problems related to missing or outstanding I/O operations, AST explained.

For the system programmer, Assist provides formatted display and permits modification of main memory without stopping the system, provides formatted control block displays and allows operator commands from a TSO workstation.

System efficiency of VS operations is encouraged, the vendor said, through displays of paging rate over the last recording interval, number of pages available and relative paging activity to the primary and the secondary paging devices.

Assist also shows job-queue utilization and provides for deadline management by allowing internal dispatching priorities to be changed by operations.

Other displays show free core and fragmentation within a region or partition and jobs "hung" in allocation or waiting for memory, AST added.

Assist runs as a problem program in 12K of memory. Written in Assembler, its internal logic determines whether it is under MFT, MVT, VS1, VS2, Hasp or ASP and adapts its processing.

The package can be leased for $125/mo from AST through P.O. Box 7729, 94119.

'Model 204' Gains Math Option

CAMBRIDGE, Mass. – The Model 204 data base management system (DBMS) from Computer Corp. of America (CCA) can be extended with the separately priced Fund package designed to make a number of mathematical functions available to the Model 204 user language, according to CCA.

The DBMS itself has been available for several years as support for IBM OS and OS/VS users. It is said to provide a complete set of facilities for the management of on-line bases.

The general-purpose user language backs the operation of remote terminals for high-speed data retrievals, report generation, data base maintenance, computations, conditional processing and data cross-referencing.

Response times are "orders of magnitude" faster than with sequential-access methods, the vendor claimed.

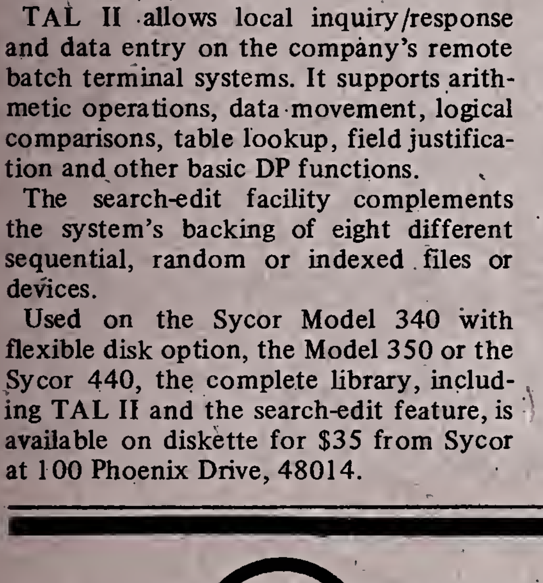
Fund enables the user to now perform such operations as square root, exponentiation, logarithmic and trigonometric functions, hyperbolic functions and calculations of absolute values, CCA said.

This option validates arguments and calls floating-point subroutines. In some cases, the mathematical routines are included as part of Fund; in other cases, the appropriate routines from IBM's Fortran mathematical library are used. Copies of that library are not distributed by CCA, a spokesman noted.

Model 204 requires a minimum 80K of memory and is written in BAL. Fund, also in Assembler language, runs with Release 3.16B of Model 204, and is not available with previous releases.

Built of four basic modules, the complete Model 204 is available under a one-time perpetual lease for $83,200 or for $2,800/mo for three years. The Fund package is an additional $2,400.

CCA is at 575 Technology Sq., 02139.



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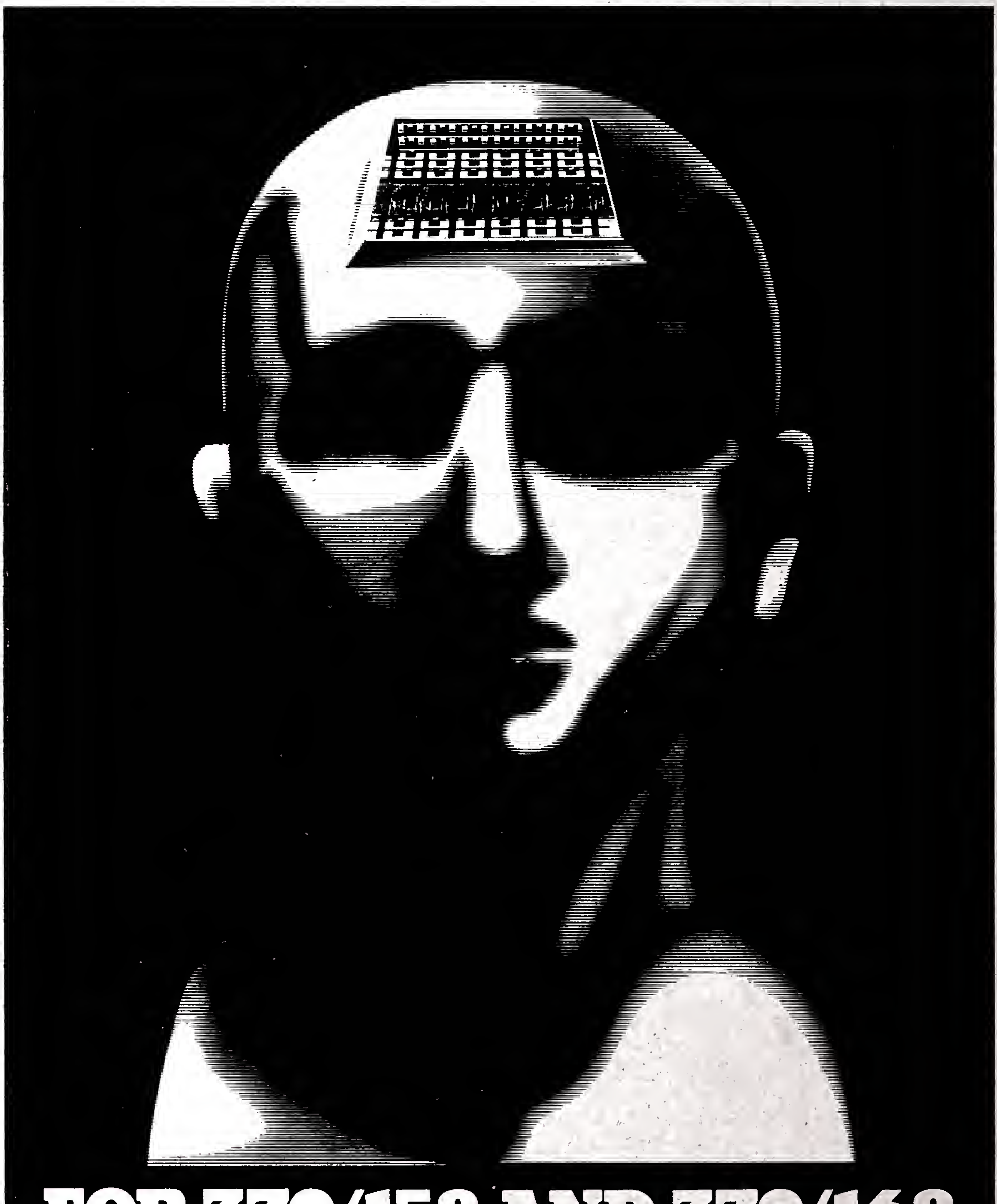

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Common Solutions Appear for Very Large Data Bases

By Harold Schwenk

Special to Computerworld

Very large data bases (VLDB) – on the order of a trillion or more bits – are appearing in ever-increasing numbers both in government and industry. Their problems are being discovered and solved independently by many organizations and, as one might expect, common approaches are starting to appear.

The size of these VLDB corresponds to roughly 1,000 large-capacity disk packs or the larger mass storage subsystems available from many vendors in various technologies and architectures.

VLDB open up a whole host of problems which either do not arise in small data bases or appear in a form which makes their solution relatively easy. The problems are due to both the vastly increased size of a VLDB and to the structural aspects of data bases as opposed to conventional files.

They arise in nearly every aspect of processing with VLDB: maintenance of information and structural integrity, physical and logical reorganization, online access, performance analysis and prediction, recovery operations, loading/unloading approaches, administration and application development methodology.

The dumping of a VLDB provides a clear example of the type of problem magnification which can occur when working with VLDB if conventional approaches are simply extended.

Data Basics

Take, for example, a data base of 100M bytes. We might expect a structured dump of the data base can be performed in roughly one half hour by an intelligent utility. Also, we might expect the dump procedure aborts for various reasons and needs to be restarted perhaps one in a hundred times.

What happens if we use the same utility to dump a VLDB of 100G bytes? First of all, we would need roughly 500 hours to perform the structured dump. Secondly, the probability of completing the dump without an abort has decreased to only .00004, which means we would have to redo the dump about 25,000 times on the average.

Obviously, the structured dump has to be reexamined for the VLDB environment. A new approach needs to be found for achieving the goal which the structured dump accomplished for the much smaller data base.

Getting Around Problem

To get around that problem, a number of approaches have been used by different organizations, typically reflecting the DP environment involved, since the constraints on the approach are greatly affected by the environment.

In general, the solutions involve recognizing a method of partitioning the VLDB so each portion can be treated individually.

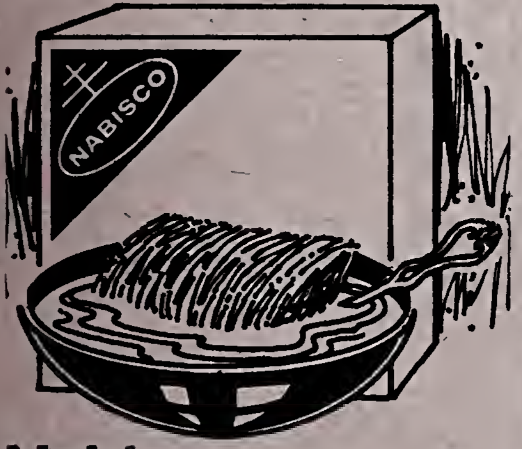
This further involves introducing constraints on conventional programming practice and a mechanism for enforcing the constraints so the effective isolation between portions is maintained. Where an organization has introduced a system development methodology, this provides the vehicle for introducing the appropriate constraints.

Some approaches to recovery are more advanced than the partitioned approach. These are often special-purpose solutions, however, which depend on specific, known properties of the application involved and which cannot easily be generalized. Thus they are not covered here.

As a result of this general approach of partitioned dumping, of course, the reloading process is likewise modified and requires a new conceptual level for coordinating the various portions of the VLDB. In general, the VLDB as such will never be reloaded in its entirety.

To effect recovery after a total system crash, we must determine which partitions may have been affected and to confine the recovery operation to as small a part of the data base as possible. In the

(Continued on Page 20)



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Solutions Beginning to Emerge For Problems Native to VLDB

(Continued from Page 19)

VLDB environment, it becomes worthwhile (even necessary) to develop more powerful recovery tools. Note that these recovery techniques are necessary, even in the relatively less complicated environment of single-thread batch usage.

In many ways, the recovery approaches which are used are similar to those which have been developed for present-day, on-line applications. They include the processing of journal files containing before or after (usually both) images of affected data base information for backing up or bringing forward data base portions and transaction streams in the on-line environment.

Related to the problem of data base recovery is that of maintaining data base integrity of information and logical structure. The data base logical structure is, after all, just another form of information which is visible to the users of the data base system.

In VLDB it is nearly certain some information in the data base is incorrect or will become so. Errors must be anticipated. This is due, again, to the tremendous quantity of information in the data base. The real problem then is to be able to detect and recover from the processing of erroneous information while minimizing the probability of requiring an extensive recovery process.

The approach commonly used is to include redundant information, especially for the situations which are expected to be error-prone. A simple example, in the case of following chains of pointers through a data base, is the inclusion of back-pointers, which are then retrieved and verified during processing to detect errors in either the pointer value or in the retrieval process.

Some VLDB systems have utilities to help purify the data base when integrity problems arise. The utility may make use of some knowledge of the logical structure of the data base to locate alternate paths to the desired information in the case where the attempted access path could not be successfully followed.

Other utilities are simply sets of tools by which a data base administrator may probe the data base and perform repairs according to his judgment.

Turning now to another subject, the issues in restructuring VLDB are quite difficult. Current approaches appear to be quite system specific, but some commonalities appear.

Commonalities Appear

The basis of these solutions is to find some mechanism for isolating small pieces of the data base so the entire data base can be processed by incremental reorganization. This can usually be done without too much difficulty for a physical reorganization of the data base.

A logical reorganization is much more difficult, since the logical structure of the data base, as seen by various users, must be preserved during the process. Techniques for accomplishing logical restructuring appear at present to be quite system and application specific.

Some other areas of interest for VLDB use are system performance analysis and prediction, data base administration, application development methodology and multithread data base processing (deadlock administration).

These subjects are, of course, of interest in regular-size data bases as well. The VLDB environment mainly emphasizes the necessity for their appropriate treatment because of the possibly very large consequences.

Schwenk is with Honeywell Information Systems and is a guest lecturer on data base systems at the Center for Research in Computing Technology at Harvard University. Readers' contributions on the subjects raised in this article will be appreciated.

'Quikjob II' Enhanced

DAYTON, Ohio – Quikjob II, the load-and-go report writer and test data generator, has been enhanced to include a CALLing capability.

As many as five different subroutines may be used with one Quikjob III program, according to the vendor, System Support Software, Inc. (SSS).

The latest version is upward-compatible with Quikjob II, but includes 16 accumulators and an optional total-time processing cycle. Indexing features can be used to handle arrays and to perform "some" character string manipulations, SSS noted.

Quikjob III can be acquired for $4,950 on a permanent lease or for $125/mo from the vendor at 28 East Rahn Road, 45429.

DBMS Standard Work at Impasse

(Continued from Page 17)

about January."

In any situation like this, Sparc has three options, according to its chairman, William Madison of Harvard Business School. It can "kill" the project, ask the study group to continue its efforts (with or without any suggested redirection) or go ahead on its own authority and make a recommendation to X3.

Commenting directly on DBMS – but before the meeting in which Steele gave his report – Madison said he "would hope Sparc could suggest a change in direction so the study group could keep working.

"It would be a damn shame to see its work cut short."

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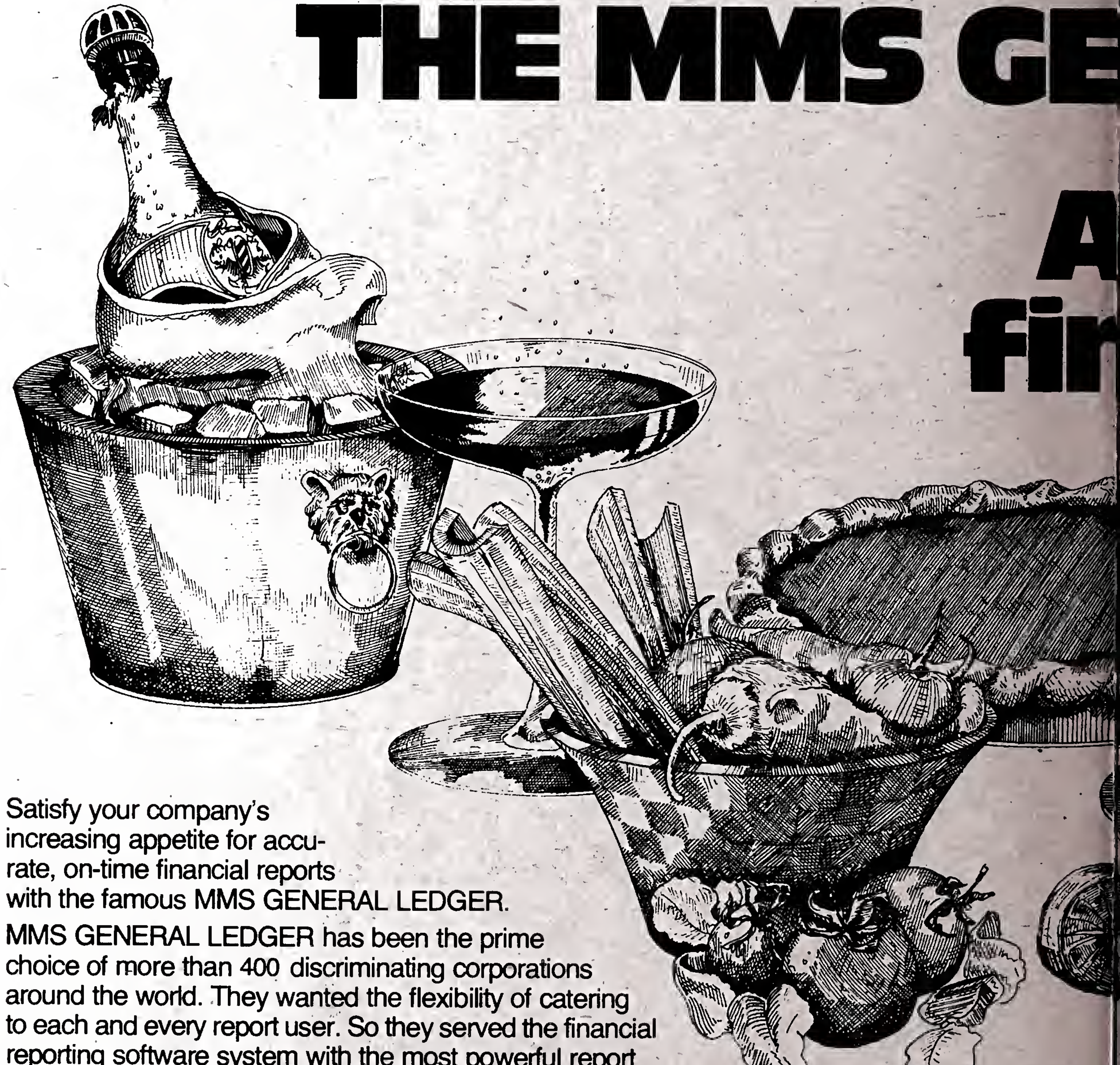

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Models Modernize Metalworking Managers' Milieu

By Barry F. Croasdale

Special to Computerworld

On the first working day of 1974, top management of Revere Copper & Brass, Inc. studied the corporate profit plan for the 12 months ahead.

As the figures (with input from 24 locations) were reviewed, the managers noticed certain potential fallacies. One in particular was major: The anticipated expense for oil in certain plans was significantly understated.

The figure was checked out and found to be understated. A new figure was developed, fed into the corporate planning model, and a revised profit plan quickly produced.

The new iteration, which reflected a much more realistic figure for oil costs and other changes, was run off with minimum effort because – for the first time – the profit plan was computer-produced.

Several other "firsts" were involved in the process. Our profit plan was ready the first day of the year, rather than at the end of February. And actual results could be tracked against the profit projections on a monthly basis rather than quarterly.

This activity helped us construct a computer-based cash flow model that, for the first time, projects ebbs and flows on a monthly basis. This model is particularly significant and vitally important to top management since continually escalating costs of energy, raw materials and capital make close, accurate tracking of cash flow essential.

Reduced Workloads

Using manually prepared plans in the past, profit and cash projections were developed only with difficulty and had limited utility. Now, under the facilities of IBM's Planning Systems Generator II (PSGII), we have converted them into computer models.

The result has been to significantly reduce the planning staff's workload, even as the plans themselves have been turned into much more effective management support.

Formalized financial planning at Revere began at the end of 1968. The impetus for using a computer came from top management, and in 1971 we considered contracting with an outside service. However, we required the development of a model that would be responsive to our special needs.

PSGII accelerated the model development process since it allowed us to concentrate on the model itself, without devising special programs for data handling and organization.

Staff Training

The decision to proceed was made in 1973 and included a significant commitment to train our staff thoroughly in PSGII operations.

Three of us attended a course in PSGII. This created a close-knit modeling team with both financial planning and programming backgrounds and was instrumental in the orderly model development that ensued.

We began work on the first model when we completed the course. In less than two months it was completed – and the fallacies, uncovered through review, became a simple matter to correct.

The Consolidated Group Income Statement is produced each month as well as for the entire year. Examples of line items in the report are gross sales operation costs, gross operating margin, net operating margin, mill overhead costs, general overhead, profit before and after federal taxes and depreciation and depletion expenses.

The profit plan is used as input to the cash flow model, where the top line item is income before federal taxes. Factors such as depreciation and accrued interest expense are added to develop total estimated receipts from profits.

The bottom line shows the projected cash flow for each month and the amount of increase or decrease. These trend projections have proved to be accurate.

Top Management Involved

Perhaps the single greatest benefit of the computerized models and their frequency is top management's increased involvement in the individual steps of the planning cycle. More information is now coming from management, especially for the cash flow model.

PSGII enables us to organize decision-making reports in a format familiar to the top executive.

Closely related is the flexibility and speed we now have to play "what if." The corporate planning staff, for example, poses "what if" questions to division and plant staff members in developing data for the cash flow model.

When management begins using this capability, the models respond very quickly with new iterations showing the projected results. In addition, communications among members of the financial planning committee are more uniform and more readily understood, since everyone uses the same definitions and language.

Costs have been significantly reduced, compared with manual model preparation. PSGII has a nominal monthly lease charge. We run it on our 370/135 under VS.

Finally, we have the flexibility to build different models for almost any discrete activity, with formats tailored to each purpose. While PSGII is supported by a set of functional macros or subroutines, we either wrote our own or tailored the existing ones to our special needs.

We are continuing to refine the existing models and expect soon to develop new models for capital budgeting, sales forecasting and to help balance the sales forecast against capacity planning.

We also expect, in the relatively near future, to use PSGII on-line.

Croasdale is manager of financial forecasting at Revere Copper & Brass, Inc. in Rome, N.Y.

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NCR Extends Manufacturers' Software

DAYTON, Ohio – NCR Corp. has added an optional on-line inquiry capability to its Bill of Material Application and Inventory Material Control Application systems for manufacturers.

The Manufacturing Systems Inquiry Module operates with NCR 796 CRT terminals linked to Century 101 or larger NCR CPUs, the company said.

The module provides access to the item master file and the product structure file created by the previously available application packages. It provides four basic displays: item information, master bill of material, "where used" and terminal status reports.

The item information display includes inventory status of the item as well as the last file update, cost factors and engineering changes associated with the item. The master bill of material display shows all lower-level components for an assembly or product by item number and description, NCR said.

'Where-Used' Display

The "where-used" display reverses that view, and lists every structure or product in which any item the user specifies is used as a component.

The terminal status report is essentially for system control rather than support of end users. It shows the number and type of requests made during the day and the number of transmission errors encountered.

The on-line inquiry module will operate with a minimum 32K of memory. A basic Century 101 can support four terminals; with additional memory, 10 of the units can be used.

The software is available free to Century users, the spokesnam noted.

School Days

Public seminars on data base-related topics scheduled for December include:

Dec. 1-2 – **Data Base Concepts**; Washington, D.C.; $295; Institute for Science and Public Affairs (Ispa), 6003 Executive Blvd., Rockville, Md. 20852.

Dec. 1-2 – **Data Base Design**; Denver; $395; The Conference Co.. 797 Washington St., Newton, Mass. 02160.

Dec. 3-5 – **Data Base Structures and File Organization**; Washington, D.C.; $395; Ispa.

Dec. 8-10 – **Structured Data Base Design**; Washington, D.C.; $450; Yourdon, Inc. (Yourdon), 1133 Avenue of the Americas, New York, 10036.

Dec. 8-12 – **Information Management System (IMS) Programming**: Houston; $450; Shell Oil Co., Information Systems Department; P.O. Box 20329, Houston, 77025.

Dec. 11-12 – **How to Be an Effective Data Base Administrator**; Washington, D.C.; $300; Yourdon.

Dec. 19 – **Data Base Management 1975**; Miami; $150; Yourdon.

Package Manages Budgets

HACKENSACK, N.J. – Control of capital budgeting, appropriation and construction-in-progress information is the design goal of the Programmed Appropriation Commitment Fixed-Asset Control System (Pac-Facs) from American Valuation Consultants, Inc. (AVC).

The package of six programs is said to provide reporting for all costs, capital and expense and time commitments – from authorization of an expenditure to the beginning of fixed-asset depreciation. It has been implemented on IBM 360/370 CPUs.

For both a total appropriation and for subprojects within the main one, Pac-Facs provides analyses of amounts budgeted, committed (through purchase orders or in-house work orders) and spent. This system may be interfaced with a user's automated purchase order and accounts payables systems, AVC noted.

Detailed and summary data is available for treating closed appropriations as construction in progress, the spokesman added. For ongoing projects, a hierarchy of record control extends from invoice receipt, to purchase order placement, to property unit control and finally up to appropriations control.

The system can be used in batch mode or on-line, is written in Cobol for an IBM 360/370 with 40K memory and at least three tape or disk files, as well as a card reader and line printer. The software can be acquired for $6,500 from AVC, Suite 303, One University Plaza, 07601.

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IBM Upgrades 3705 Front End

By Ronald A. Frank
Of the CW Staff

WHITE PLAINS, N.Y. – IBM has upgraded its 3705 front end by adding monolithic memory, a faster communications scanner and support for 56 kbit/sec lines.

The version is called the 3705-II and it includes improvements to the Partitioned Emulation Program (PEP) mode which will allow the controller to simultaneously handle lines operating in 270X emulation as well as lines operating under the Network Control Program (NCP).

The earlier 3705 could handle only one PEP function at a time, an IBM spokesman said.

Both 360 mainframes operating with Binary Synchronous Communications (BSC) and 370 mainframes operating with Synchronous Data Link Control (SDLC) can be handled by the 3705-II.

The addition of dual channel adapters allows the 3705 to service two mainframes. The adapters can transfer data in blocks up to 32 characters compared with the current maximum of four characters in the earlier version.

The faster scanner uses a cycle-steal feature to stop the control program for one machine cycle when the buffer becomes overloaded. During this operation, data moves directly to and from storage bypassing the 3705's control unit. The faster scanner transfers data in blocks up to 254 characters. The 3705-II has a machine cycle time of one µsec compared with 1.2 µsec on the earlier version.

The 3705-II was described as being able to handle a larger number of high-speed lines than the earlier model. It can support 56 kbit/sec transmissions compared with a top speed of 50 kbit/sec for the 3705-I.

But IBM would not say how much additional high-speed line capacity this version has. The unit can "provide up to six times the number of high-speed lines available for the 3705-I," an IBM spokesman said.

But exact figures are dependent on amount of storage, message block length, line speed, the percentage I/O utilization of the communications line, the line discipline, the line mode and the division of lines between emulation and NCP in the PEP environment, he said.

All upgrades to the 3705 can be installed in the field, and any 3705 controller that contains the monolithic memory will be designated as a 3705-II, IBM said.

A typical small 3705-II including one 75 bit/sec line, three medium-speed lines (2,400 bit/sec to 9,600 bit/sec), emulation program and 32K of storage would cost about $1,426/mo on IBM's Extended Term Plan (ETP) of 24 months. A large system including 98 medium-speed 2,400 bit/sec lines, two 56 kbit/sec lines and 250K characters of storage would cost about $5,988/mo on ETP.

ETP prices for the 3705-II range from $1,400/mo to $6,000/mo compared with $1,400/mo to $8,400/mo for the 3705-I. Straight monthly rental ranges from $1,600/mo to $7,000/mo for the 3705-II compared with $1,600/mo to $9,800/mo on the earlier version. Purchase prices are $53,000 to $228,000 compared with $53,000 to $319,000 on the 3705-I. First deliveries are scheduled for the third quarter.

NP/80 Has Communications, Data Base Management

By Patrick Ward
Of the CW Staff

CUPERTINO, Calif. – Four-Phase Systems, Inc. has introduced a combination communications and data base management computer.

The NP/80 network processor is designed to help users geographically distribute their data bases in hierarchies that parallel the users' organizational structures, Four-Phase said.

The NP/80 is said to represent the first use of 16K-bit dynamic random-access memory (RAM) chips. The higher density chips offer both production economies and size advantages, according to Four-Phase.

The company, which builds the 16K chips itself, also offers static 4K RAM chips for smaller NP/80 memory configurations.

The 16-bit processor can offer up to 256K of Large-Scale Integration (LSI) memory and can support up to 270M bytes of disk storage, the vendor added.

Intended for use in large regional and district offices, the NP/80 allows each level of an organization to store frequently used data in local system files. Four-Phase IV/40 or IV/70 satellite processor/data entry system users can access local, regional or central files thorugh the NP/80 with automatic routing to where the data resides.

A typical configuration might include two 32-keystation IV/70 systems directly connected to the NP/80 through channel interfaces.

The NP/80 can concurrently support shared-file access and high-speed communications for separate applications programs on two IV/70s, a spokesman noted.

The systems can be programmed in Cobol to work interactively with the NP/80 data base for on-line updates and transaction processing, Four-Phase said.

The 64-keystations can also access the corporate DP center's data base at speeds up to 50 kbit/sec through the NP/80's wide-band communications capability. The NP/80 offers compatibility with current IBM line disciplines and will support IBM's Synchronous Data Link Control (SDLC), Four-Phase said.

The NP/80 also offers up to six 9,600 bit/sec multidropped lines for satellite processing in branch office systems further down the corporate hierarchy, Four-Phase said.

However, users could choose to keep unique data bases at the distributed sites and send only summaries to the central site, which would then inquire into the distributed data bases to get detail as needed.

Multiprogramming Executive

A resident multiprogramming executive provides the NP/80's network control and data management services, the spokesman said. The NP/80 is transparent to the user, who continues to do his application programming on the IV/40 or IV/70 satellite system.

Four-Phase provides two families of software for hierarchical network processing. The Data IV/70 family includes three parameter-driven packages for users who want data entry, retrieval and file management. The Network Transaction Processing (NTP) family is a Cobol-based group of six packages for the systems-oriented user who wants maximum flexibility and interactive access to both local and central files. Reports and documents can be generated at remote locations using Cobol, RPG, Sort, Assembler, DOS and an extensive selection of utilities.

Monthly Rental

Monthly rental for the NP/80 with 16K bytes of memory and communications support for three 9,600 bit/sec lines is $312 on a 42-month lease. A system with 16K bytes of memory, 60M bytes of disk storage and support for one 9,600 bit/sec line rents for $771 on a 42-month lease.

A system with 64K bytes of memory, 67M bytes of disk storage and support for three 9,600 bit/sec lines rents for $964 on a 42-month lease. And a system with 256K bytes of memory, 67M bytes of disk storage and support for one wide-band line with speeds to 59 kbit/sec and three 9,600 bit/sec lines rents for $1,419 on a 42-month lease.

All lease prices include a channel interface to a System IV/70, maintenance, software, systems engineering support and systems education services.

Initial deliveries of the NP/80 will be made during the first quarter from the firm at 19333 Vallco Parkway, 95014.

Tymshare Responds to Telenet Complaint

WASHINGTON, D.C. – Tymshare, Inc. has told the Federal Communications Commission (FCC) that its Tymnet network operates in compliance with the joint user provisions of the commission rules and that therefore it should not be a common carrier.

The Tymshare response came in answer to an informal complaint by Telenet Communications Corp. to the FCC. Telenet had alleged that the Tymnet operation is a separate communications service and that it should be regulated.

Both companies provide a similar packet-switched type service to users. And, according to the Tymshare response, as soon as Telenet began to provide service, "it attempted to drive from the market its only competitor." Telenet operates as a common carrier while Tymshare is nonregulated.

Tymshare said the questions raised by Telenet were the same ones now under consideration by the FCC in Docket 20097, its study of value-added carriers and services. It said the commission should complete its work in this proceeding since the issues raised by Telenet are those already under study.

"Telenet is using this [informal complaint] to eliminate all activities it views as affecting it in the marketplace," Tymshare said. A spokesman for the FCC staff said the Tymshare answer had been sent to Telenet and that the staff planned no further action on the complaint at this time.

A Telenet spokesman said the Tymshare response was being carefully studied to see what Telenet's next step would be. Meanwhile, the FCC staff is reportedly working on the draft of a final decision in the value-added proceeding. It is not known when the commission will vote on the issue.

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Terminal Transactions

'Tics' Speeds Design of Systems Using NCR 796-301 Display Unit

DAYTON, Ohio – NCR has announced software designed to simplify and speed the development of on-line systems using the NCR 796-301 visual display terminal.

The software is called NCR Terminal Information Control System (Tics). It is said to be designed to overcome two of the most difficult problems in implementing on-line CRT systems: Design of CRT screen formats and interfacing to an on-line communications driver.

The software operates with an NCR Century 101 or larger processor with a minimum of 48K memory. It can support a maximum of 20 NCR 796-301 visual display terminals. The 496-301 is a pollable terminal which can transmit either a line or a full screen at a time.

The system includes two basic subsystems, the screen generator and the terminal manager. With the screen generator, the programmer fills out coding worksheets to define a CRT screen format. The data is input to the screen generator via punched cards. The system generates a printed report showing the screen formats as they will appear on the CRT screen, the company said.

In addition, the screen generator sets up an application work area disk file for use in the final on-line program and a communications disk file to store the actual screen formats.

The second subsystem, the terminal manager, controls and executes all communication functions for the application programmer. This module relieves the programmer of the need to know the detailed working characteristics of the on-line communications driver and how to interface the application program to it, NCR said.

Tics is available now, free of charge, to Century computer users.

M-8 Educator Based On Microprocessor

OLATHE, Kan. – The M-8 Educator from Technical Communications, Inc. is a microprocessor-based communications terminal. The system provides all essential functions for program development with a 53-key solid-state (Hall effect) keyboard; 64-character by 31-line CRT display; 110 bit/sec Teletype-compatible serial I/O; 300- or 600 bit/sec TTL-compatible serial I/O; composite video output for use with optional remote monitor.

The microprocessor module includes debug/monitor with user-callable I/O subroutines; 2K random-access memory expandable to 32K; two 8-bit TTL-compatible output ports; two 8-bit TTL-compatible input ports; and parallel entry port for high-speed peripherals.

The optional features for this unit include: a firmware-resident assembler, a cassette tape storage module and a programmable read-only memory programmer. Delivery is said to be six to eight weeks at a price of $1,795.

The firm is at Box 306, 66061.

Voice Adapter Looks Like Princess Phone

BURLINGTON, Mass. – Intertel, Inc. has a voice adapter, designated VCA700, for alternate voice communication on four-wire data lines.

The unit, which is compatible with Intertel's 1,200 bit/sec, 2,400 bit/sec, 4,800 bit/sec and 9,600 bit/sec modems, has a molded plastic handset and base, similar to the Princess telephone used by the Bell System.

Intertel's voice adapter connects to an Intertel modem through a self-contained cable. No connections to the telephone lines are necessary. The modem and voice adapter take care of all switching, ringing, interrupts and signal summing.

A small speaker produces audible ringing signals, and, for areas where a ringing signal cannot be heard, an LED indicator lights to show that a ringing signal is present.

Price of the VCA700 is less than $375. Lease price for a three-year lease is approximately $12/mo. The firm is at 6 Vine Brook Park, 01803.

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Terminal Transactions

Chemical Firm Uses Data Base to Monitor Rail Cars

By Hollis J. Sobers

Special to Computerworld

Five years ago Allied Chemical Corp. set up a computerized data base to monitor operations of its rail car fleet with the twin objectives of providing better service to its customers and achieving optimum productivity from its transportation resources.

The data base helps prevent loss of profits caused by inactive or underused equipment. Reports generated from the data base show where the 6,000 hopper and tank cars are located, their condition and their utilization.

Individual shipments can be expedited while management is given information to assist in improving the system's operations. Western Union provides the communication network used to continuously update the data base. Most Allied Chemical plants have Infocom terminals, a Western Union message-switching system.

Whenever a rail car is received, loaded or shipped, a notification message is sent out from the plant. This traffic is switched off-net by Infocom and sent via a TWX circuit to a Mitron MDRS-9 terminal in Allied Chemical's computer center at Morristown, N.J.

Plants which are not included in the Infocom net send direct to the MDRS-9 by TWX.

The MDRS-9 is an off-line communications terminal which reads and records computer-compatible magnetic tapes.

Performance Data

Intermixed with messages from the plants are car location report messages from the railroads that come to the MDRS-9 terminal at night. These reports locate rail cars by junction, city, time sighted and whether empty or loaded and include a car condition code. These messages provide Allied Chemical with performance data for the system.

Recording the incoming traffic onto magnetic tape for computer processing, the MDRS-9 helps by collecting it off-line and by eliminating paper-tape conversion or keyboarding from hard copy.

The system includes an MDRS-9 with automatic polling option which incorporates a timer to start the polling sequence. Connected to the TWX network by an 811B data auxilliary unit and 801C automatic calling unit, the MDRS-9 has a programmed memory to store TWX numbers and sign-on information. It dials and collects car location reports from railroads with on-line computerized data bases.

Messages originating at Allied Chemical plants or from railroads which come in via TWX are accepted by the MDRS-9 in autoanswer mode with the MDRS-9 providing answerback.

Some Canadian railroads, e.g., Canadian National, and a few domestic railroads utilizing Telex service transmit their data to a Telex machine at the Allied Chemical wire room. The Telex tapes are retransmitted to the MDRS-9 using the Telex-to-TWX service provided by Western Union.

At set intervals, the MDRS-9 switches into an automatic polling cycle to collect traffic from the railroad computers which require interrogation. During a polling cycle the MDRS-9 will appear busy to incoming calls.

The MDRS-9 equipped with autodialer and interval timer was built by Mitron Systems Corp.

Sobers is a senior consultant with Allied Chemical Corp.

Hughes Aircraft Adds Display Unit

CARLSBAD, Calif. – An addition to the Conographic graphic display terminal line, offering high resolution, selective erase and built-in serial interface has been introduced by Hughes Aircraft Co. Industrial Products Division.

The fully interactive Conographic-9 terminal, with a base price of $9,750, is said to do with hardware what most terminals require to be done in software.

Standard features of the Conographic-9 terminal include 17-in. 1,029-line-scan video monitor with high screen light output, built-in zoom/pan, a joystick for graphics interaction and a hardware graphics processor for scaling graphics and alphanumerics.

In the Conographic process, curvilinear information is displayed by converting all contour data to conic curves. In this way, the terminal produces smoother curves than conventional x-y plotting and accomplishes this with considerable reduction in the data required.

This data reduction results in more cost-effective communication by permitting faster image transmission, higher effective telecommunications capacity and lower storage requirements at the host computer.

The display terminal is offered on 120-day delivery from 6855 El Camino Real, 92008.

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CONTROL DATA CORPORATION

In Memorex Planner's View

IBM 3340 Introduced Generation of Disk Technology

By Patrick Ward
Of the CW Staff

SANTA CLARA, Calif. – IBM's 3340 data module drive introduced a generation of disk technology, in the view of a Memorex Corp. product planner.

The 3340 was the first example of IBM's Winchester disk technology, according to William H. Warren, director of product and business planning at Memorex.

"IBM didn't spend that much money for one product," he said.

The 3340 drive characteristics include a head with very low mass, which allows a lighter slider assembly and a lighter mechanical structure overall, he said.

The design should both reduce manufacturing costs and service calls, he said. Power consumption should go down and, since the head is riding close to the disk surface, it can record data at high densities, he said.

But, because that head is riding so close to the disk surface, it needs to operate in a very clean environment. Hence the head is enclosed within the data module, Warren said. While the product is economical to make, it requires careful manufacturing, he added.

"It's clearly the same technology appearing in IBM's terminals," he remarked.

The nonremovable disk files in the 3791 appear to be a one-platter Winchester product, he said. The System/32 had the same kind of enclosed disk, he added.

"IBM may be aiming at a common disk family, just packaging them differently," he remarked.

IBM is increasingly pushing the concepts of data base, data communications, teleprocessing and distributed processing, he said.

"All these applications rely on nonremovable, reliable disks," Warren remarked. Since most users still need some removable disk storage, IBM lets its larger users mix 3330s and 3350s on the same controller.

Small and mid-size shops can combine nonremovable 3344s and removable 3340s instead, Warren added. As users become more and more on-line-oriented, they can increasingly move to fixed disks.

"I don't think we've seen the last removable disk pack from IBM, however. There is a lot of technological room for growth, such as a double-density 3348," he said.

Is the Winchester technology to become a de facto standard for the industry? Engineers differ on whether there are current technologies that could supersede the Winchester line, Warren said.

The Winchester will probably stay around until the 1980s, Warren predicted. The data rate coming off disks is already about as fast as 370s can handle.

How will the independents fit into the Winchester scenario? They will probably offer "equal-for-less" products, plus some functionally different, but compatible devices that give the user more than just an equivalent product, Warren mentioned.

Optical Scanner Users Satisfied: Datapro

DELRAN, N.J. – Users of optical readers are reasonably well pleased with the performance of these devices, according to a Datapro Research Corp. survey.

The ratings assigned by 131 users to 175 optical character, mark and bar code readers yielded the following overall profile of user satisfaction:

	Excellent	Good	Fair	Poor
Overall performance	30%	54%	13%	3%
Ease of operation	34	50	14	2
Freedom from recognition errors	25	51	16	8
Freedom from document jams	30	44	15	11
Equipment reliability	29	42	18	11
Maintenance service	30	38	23	9

"Thus, while most users are well satisfied with the overall performance and the ease of operation of the current optical readers, they tend to feel there is room for considerable improvement in the areas of reliability and maintenance service," Datapro said.

Optical character recognition (OCR) scanning offers the notable advantage of automatic conversion of human-prepared data into machine-readable form, Datapro said. However, numerous obstacles have hindered acceptance of OCR scanning, the research firm said.

Costs a Stumbling Block

The direct equipment costs can dissuade many customers from trying the technique, Datapro said. But there are also hidden costs in "the comprehensive redesign of forms, adjustment of input-preparation procedures, personnel retraining and sometimes revamping of the DP system itself."

Difficulties in reading handprinting probably remain as the most serious technical liability of OCR scanning, Datapro said.

"Handprinting is being read now, but with an appreciable rejection rate and some substitutions (errors). Rejections require human intervention, and a high rejection rate can essentially neutralize the automation benefits of the scanner," Datapro said.

Beyond this, "key-to-disk systems . . . are currently more cost-effective in most data entry environments than optical scanning and have therefore begun to dominate the scene," Datapro said.

"This ascendancy is hardly surprising in view of the facilities offered by the shared processors and supporting software" of key-to-disk systems, Datapro said.

All About Optical Readers includes individual user ratings earned by several popular optical scanner models, as well as specifications and prices of 101 commercially available readers from 41 vendors.

The 36-page report costs $10/copy from the firm at 1805 Underwood Blvd., 08075.

Conference Views COM's Rebirth

IPSWICH, Mass. – "The Rebirth of Computer-Output Microfilm" (COM) and its future impact on manufacturers and users will be the subject of a conference here Dec. 7-9 sponsored by the Institute for Graphic Communication, Inc. (IGC).

Sessions will include: Introduction to COM, Application Workshop, COM Equipment Architecture – Today and Tomorrow, COM Recorder Software – Key to Success, Designing a COM Installation: What the User Needs to Know or What the Vendor Won't Tell You.

Robert Laurent of McDonnell Douglas will chair the conference to be held at the IGC conference center here.

Further information is available from Richard D. Murray of the institute at 375 Commonwealth Ave., Boston, 02115.

STC Ups Tape Drive Prices; Maintenance Costs Also Rise

LOUISVILLE, Colo. – Storage Technology Corp. (STC) will increase prices for its Model 3400 tape subsystems (1,600 bit/in.) by about 4% as of Jan. 1.

The company will also boost maintenance charges for both its disk and tape drive products by 9% on the same date.

STC is at 2270 S. 88th St., 80027.

IBM Adds 3350 Backup Option, 3800 Burster/Trimmer/Stacker

WHITE PLAINS, N.Y. – IBM has made some hardware and software additions to its 3350 fixed-disk line, including a feature that can provide backup control for a string of 3350s.

The company also introduced an option that enables the high-speed 3800 printing subsystem to separate, trim and stack printed sheets in one continuous operation.

The recently announced C2 and C2F versions of the 3350 drive both have a backup control capability. (The C2F differs from the C2 in that it has 1.14M bytes of fixed-head storage/spindle.)

In normal operation, the two models function like the standard "B" 3350 drives on a string. If, however, the control circuitry in the "A" or lead drive goes down, the user can switch the control function to the "C" drive without calling a customer engineer, IBM said.

The 3350 Models C2 and C2F cost $1,500/mo and $1,860/mo respectively, under the company's Extended Term Plan (ETP) and $1,763/mo and $2,186/mo under the standard IBM rental agreement.

Purchase prices are $64,650 and $80,150. The adapter on the A drive that permits the backup operation is $10/mo on the ETP plan, $12/mo standard rental and $430 purchase.

The software products include Analysis Program-I, which allows the operator at the CPU console to test the operational status of the 3350 hardware and media.

IBM also announced enhancements to an existing OS/VS dump/restore utility that allow the user to dump or restore on the basis of just a data set or track, as well as on a volume basis. First deliveries of the 3350 products will be in the second quarter of next year.

The 3800 printer feature will be available in the fourth quarter of 1976.

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CMC Product Planner Says

Reports on Momentum to Distributed DP Exaggerated

LOS ANGELES – Reports on the momentum of users toward distributed processing have been exaggerated, according to a product planner for a key-to-disk vendor here.

While he favors putting machine intelligence at the point of data entry to catch errors at the source, Peter F. Zinsli of Computer Machinery Corp. (CMC) said actual processing can best be done on the host mainframe.

"A lot of users have unrealistic expectations of what a local CPU can do for them," he said.

Users may complain about dealing with the central DP site, but the central DP shop can often justifiably place the blame on poor quality data from the users, he said.

Also counter to distributed data processing is the management information systems approach that requires all a corporation's files to be accessible to a central site, Zinsli said.

"Your real processing gets done where your files are," he said.

"It's very unlikely the user would want to put data in a remote file without the central site receiving the same data," Zinsli said. That leaves the distributed system user with the problem of justifying redundant files, he remarked.

Similarly, a satellite processor system needs systems analyst people to get it off the ground and then support people to keep it going, he said.

In recent years, corporations have gone just the other way, pulling 360/30s, 360/40s and the like out of their branch offices and putting in remote-job-entry terminals linked to a large central mainframe, Zinsli said.

Many key-to-disk users are still fresh from their keypunches, Zinsli said, and want extensive formatting capabilities, but don't want to make the effort to program the system to handle ordinary key-to-disk jobs.

Centralized key-entry operations are still the efficient data entry answer for many firms, Zinsli said. The fact that "your vendors won't send you all of your bills in one format.' is both an argument for centralized key entry and against optical character recognition (OCR), he said.

OCR Limited

While some have argued that OCR or a combination of OCR and key-to-disk will supplant key-to-disk, Zinsli feels scanning has too many limitations.

OCR cannot provide immediate feedback at the point where the user is entering faulty data, he said. And OCR users still have to choose between a high error rate and a low reject rate or the reverse, he said.

Zinsli did say, however, OCR is better suited to some applications, like turnaround documents, than is key-to-disk.

Bits & Pieces

NMA Proceedings Covering Years 1963-1974 Available

WASHINGTON, D.C. – The National Microfilm Association's (NMA) 1963-1974 proceedings, covering over 300 technical and application papers on computer-output microfilm (COM), are now available.

The 12 sets of proceedings comprise the largest collection of documents ever assembled on COM, the NMA said.

The proceedings are on 53 microfiche at a 24X reduction with 98 frames. Included in each set is a coordinate index with the entire group contained in a plastic fiche book.

The proceedings cost members $30 and nonmembers $45 from the NMA's publication sales department, 8728 Coleville Road, Silver Spring, Md. 20910.

Microfiche Reader Portable

MINNEAPOLIS – The NMI-75 from Northwest Mircrofilm, Inc. is a portable three-fourth-size microfiche reader that occupies 8-3/4 in. by 9-1/2 in. of desk space, the company said.

The device costs $189 from the company at 6840 Shingle Creek Parkway, 55430.

Firm Reinks Ribbons by Mail-Order

DOVER, N.H. – Yankee Computer Supply here will reink printer ribbons and return them to users on a mail-order basis, according to the firm.

A typical IBM 1403 printer user will accumulate 12 or more ribbons and ship them directly to Yankee which realigns, reconditions and reinks the ribbons at $5:75 each. Yankee then mails the ribbons back to the customer.

Most ribbons can be reinked two to four times without loss in print quality, the company said from Box 645, 03820.

CAM-I Seminar Planned

ST. LOUIS, Mo. – Computer-Aided Manufacturing-International, Inc. (CAM-I) will hold a two-day coding, classification and group technology seminar here in mid-January.

Fees are $25 for CAM-I members and $250 for nonmembers. Further information is available from C.H. Link, CAM-I's Executive Secretary and General Manager, at 611 Ryan Plaza Drive, Suite 1107, Arlington, Texas 76012.

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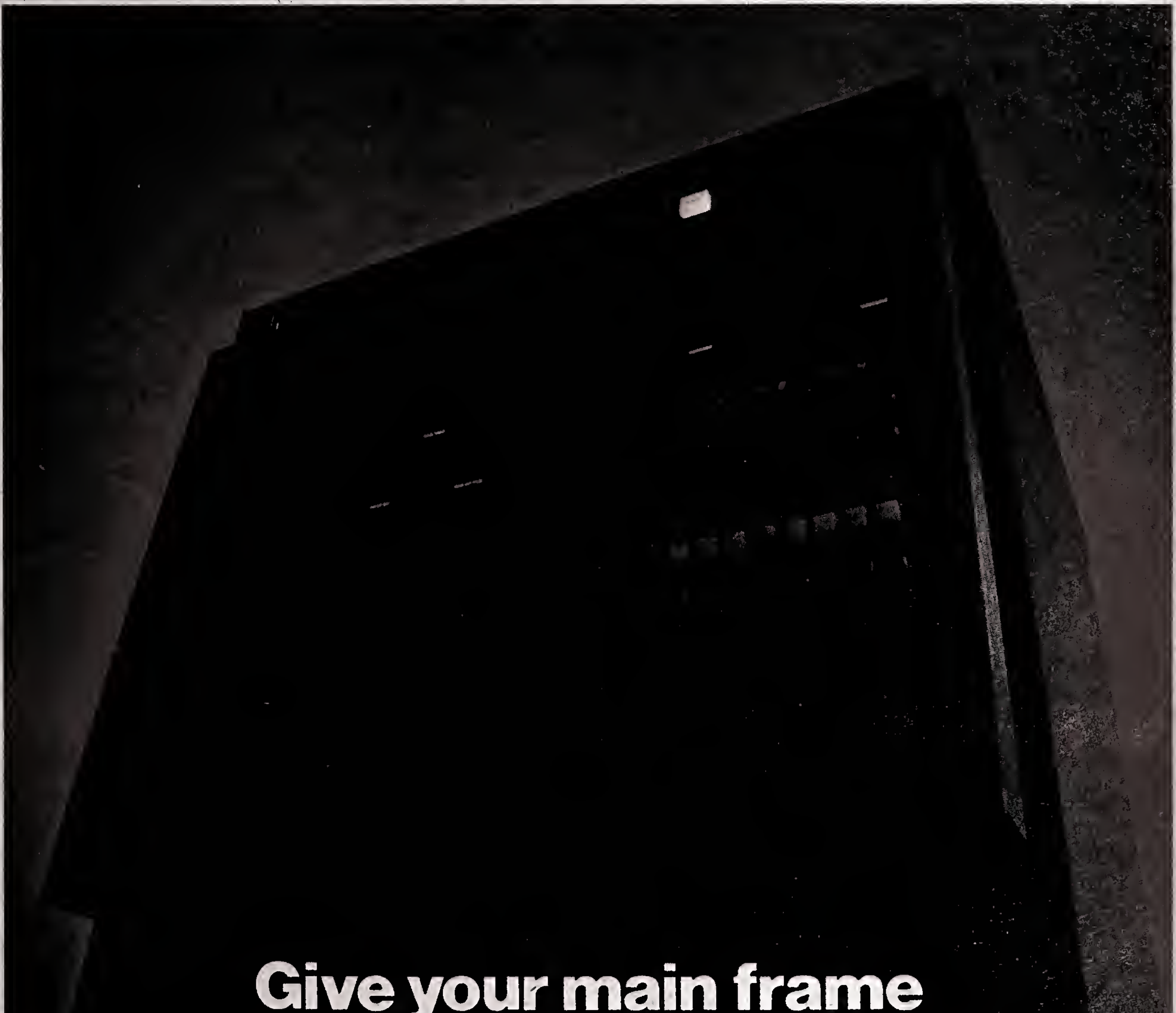

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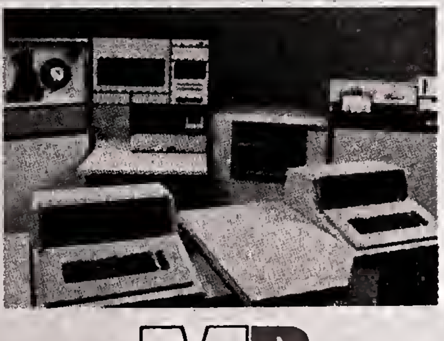

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DP Manages Complex Manufacturing Environments

By John J. Donovan

Special to Computerworld

Control and efficient use of resources is the objective of manufacturing management. The complexity of managing these resources is reflected in the ever-changing manufacturing environment.

New product designs, products being phased in or out, processes for manufacturing being improved and volatile swings in economic activity have all led to management problems.

In recent years, computing equipment and concepts have been applied to the manufacturing function to provide assistance. Much of this activity has been in the traditional functions of forecasting/order entry, inventory control/management, order point, materials requirements planning (MRP), product structures/routings, master/production schedules.

It is obvious emphasis has been on the material resource. This stops short of serving the full manufacturing function, since total manufacturing resource management (MRM) looks at the proper utilization and control of all resources.

In order for manufacturing management to gain the full advantage of the computing resource, it must now extend its application to the other key resources of manpower and machines.

Since all of these resources interrelate, effective MRM requires integrated reporting systems to communicate manufacturing information.

Data created by various manufacturing functional groups must be recorded at the source, stored and be readily available to manufacturing management for appropriate decision-making requirements.

Data collection on information generated by shop operators, leadmen/foremen, material handlers, expeditors, timekeepers or other manufacturing personnel requires the application of appropriate computing equipment.

The selection of equipment should consider human and environmental factors in addition to data requirements.

Devices designed for the function are available from various vendors. Input media can include special badges and/or cards for fixed data while variable data can be entered by buttons, dials, switches, knobs or keyboards on special-purpose terminal devices.

Transactions can be tailored for specific systems needs and can include the ability to "step an operator through" a transaction. Edit checks can be made as data is created, increasing control.

Once manufacturing data is captured and recorded, data distribution can proceed on a timely basis to appropriate control points and management. Manufacturing management can be immediately informed of critical transactions via data transmission with output from various devices, or inquiry capability can be provided.

Integration should begin with pertinent order/forecast and inventory management systems. A subsequent requirement is the development of master/production schedules to use as a base for performance measurement. Another requirement is a detailed work-in-process inventory system to provide appropriate resource control of all product/material movement in the production areas.

Subsequent utilization systems then should be implemented to provide communication of production data on manpower/departmental performance, material movement and use and machine utilization.

Special-purpose data collection and data distribution hardware with proven support software is available now from a number of reliable manufacturers of computing equipment. This equipment has been designed for ease of use by shop operators for both clean and hostile environments found in the manufacturing industry.

How can this equipment be applied? Many firms have installed equipment to assist in managing manpower with attendance reporting and labor reporting/performance; materials with work order tracking, receiving/shipping and quality/inspection reporting; machines with machine utilization, monitoring, control and maintenance/repair.

The applications that use this equipment within the manufacturing environment should not be considered to be just another data processing or systems project. It is truly unique in many aspects.

Consider the following vs. a more traditional DP project:

- Installation will take place in a company function that generally consumes 60% to 80% of total budget.
- Labor skill levels have to be considered in light of equipment operations.
- Labor contract considerations require successful handling.
- Environmental factors are often hostile and require assurances for systems performance.
- Unique terminal features may be required to satisfy human engineering or practical considerations.
- The development staff must have in-depth knowledge and comprehension of the functional area.
- Almost all company functions are involved in a successful project.

When approaching such an undertaking, the following are key considerations that should be utilized:

- Obtain total commitment at the most senior levels of manufacturing and corporate management.
- Use the corporate task force project concept.
- Involve corporate functions in appropriate task responsibilities; i.e., involve manufacturing users for requirements definition, manufacturing and data processing for hardware selection (terminal usage) and accounting for appropriate definition of financial/cost requirements and consideration.

Donovan is president of Rolfe Associates in Wethersfield, Conn.

Wake me when it's over

Read the Year-End Review and Forecast, a special Supplement in the December 31st/January 7th combined issue of Computerworld.

What sort of a year was it? A year like all years - filled with those events that alter and illuminate our times. And you were there, as Walter Cronkite used to say. Now it's time to leave the trees and sit back for a good look at the forest. And that's what we'll be doing in our special, combined December 31st/January 7th issue.

Edited by Drake Lundell, this special issue will review all the big stories in the 1975 computer world - from developments in hardware, software and communications to changes in computer law and the impact of computers on society. It'll be an excellent overview of what's happened, combined with some knowledgable forecasts of what's going to happen in 1976. And if you have anything to do with computers, you should be there on December 31st.

If you're a DP marketer, remember the closing date for this special issue: December 12th. Contact your *Computerworld* salesman for complete details. Or call Judy Milford at (617) 965-5800.

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Authentic information is freely available **WITHOUT CHARGE** from the Australian Embassy in Washington, D.C. (202) 797-3000, and the Australian Consulate General in New York (212) 245-4000, San Francisco (415) 362-6160, Los Angeles (213) 380-4610 and Chicago (312) 329-1740.

Mini Bits

MSC Offering HP Systems With 80-, 40M-Byte Disks

SANTA CLARA, Calif. – Microcomputer Systems Corp. (MSC) is shipping 40M-byte and 80M-byte disk systems interfaced to Hewlett-Packard HP-2100 and 21MX computers.

Operating under DOS and RTE, the MSM-10 disk systems provide a positive alternative to HP's 5M-byte and 15M-byte disk systems.

The disk systems consist of an Ampex Corp., Control Data Corp. or Century Data Systems, Inc. disk drive, MSC microprogrammed controller and host adapter.

Expandable up to 15 drives and multiported up to eight computers, the disk system can provide 4,500M-bytes of disk storage with a single controller.

Price for a 40M-byte system is $17,500. An 80M-byte system sells for $19,500 from the firm at 3068 Kenneth Ave., 95050.

HP Industrial Systems Prices Drop

CUPERTINO, Calif. – Reductions averaging about 8% have been made by Hewlett-Packard in the price of a series of computer systems used for measurement and control. Reductions are approximately $5,000 in HP 9611-series systems in the $65,000 price range. At the same time, contract maintenance charges on the system have been reduced 10% or more.

Floppy Interface Released

NATICK, Mass. – Control Logic, Inc. has developed an interface for the Sykes 7150 and 7250 floppy disk that will sell for $500.

The package includes interface documentation, diagnostic program, disk drive program and the disk operating system with assembler and editor. Systems using the software will require 3K bytes to 7K bytes of random-access (RAM) memory, depending on the program objectives of the system, according to the firm at 9 Tech Circle, 01760.

Intel Reduces Software Rates

SANTA CLARA, Calif. – A 50% reduction in microcomputer software royalty rates has been announced by Intel Corp.

The cuts, which went into effect worldwide on Nov. 1, should result in a savings to Intel users of some 25% of time-shared networks to program microcomputer systems, but do not apply to programs used in a background batch or remote-job-entry environment.

In Accounting, Circulation

Newspaper Saves $1,500/Mo With Minis

By Mal L. Stiefel
Special to Computerworld

SPRINGFIELD, Ill. – The *State Journal-Register*, a local daily newspaper, has scrapped its IBM 360/20-based card system in favor of two Digital Equipment Corp. PDP-8Es.

Each PDP-8E has 32K 12-bit words of main memory along with disk, tape, printer and on-line CRTs.

The units, installed in August 1974, support the paper's circulation and accounting functions at a saving estimated to exceed $1,500 a month, according to Computer Operations Supervisor Phyllis Harrison.

Increases in tab room personnel costs and CPU overtime charges triggered the search for a replacement in 1973, as the IBM 360/20 utilization consistently exceeded the 176-hour monthly base. The only systems considered to replace it were an IBM System/3 and the PDP-8s.

"IBM lost on cost," Harrison said. The $68,000 price tag on the two DEC systems was less than the cost of one System/3.

One machine, dedicated to the circulation function, carries a card reader and a Decision Data Corp. 8010 card punch that can be switched off-line and used as a conventional keypunch.

Otherwise, it is identical to the other system, which is dedicated to the accounting function.

Recently, while the circulation system was down for several hours, the accounting system backed it up performing critical file updates and reports – a benefit the lone System/3 wouldn't have afforded.

DEC supplied payroll, accounts payable and receivable and circulation application programs written in Dibol, running under the Commercial Operating System.

The accounts payable package became operational in November 1974 with relatively little rewrite needed.

The other programs, particularly the payroll package, were modified extensively by the paper's staff of one full-time and one part-time programmer. In addition, a general ledger/trial balance program was developed in-house.

Payroll is run once each week for the *State Journal Ledger's* 350 employees.

Once a week, 42,000 mailing labels are printed in a three-hour run: 6,000 each for Saturday's edition; 6,000 for Sunday; and 30,000 (6,000 names, five times each) for the daily issues.

About 1,000 advertisers' invoices and statements are printed each month. Charges are computed by lineage for classified ads and by the inch for display ads. The report also indicates those advertisers who have used their contracted space and those who haven't.

Every day, a carrier draw list and manifest is printed for the 750 newsboys and delivery agents, along with a listing of cash payments received from carriers. A total circulation report also comes out each day.

Other weekly reports cover the 13,000 paid-in-advance subscribers and the 4,000 who carry a subscriber accident insurance policy sold through the *State Journal-Ledger*.

The availability of the vital sort/merge utility program has been primarily responsible for the dramatic improvement in throughput realized with the twin minis.

Twelve-thousand records, each 100 characters long, can be sorted on a complex key in about five minutes. With the old system, this was done on the IBM 83 card sorter; the task took many hours.

Now, the 83 has been laid to rest. A low-speed IBM 548 60-column interpreter lingers, though, to interpret the cards punched on the 8010.

Since excess time is available on both systems, additional applications are being designed. Preliminary work is under way to provide backup for functions being performed on an IBM 1130 in the composing room, and a series of applications are planned, centered around a unified subscriber file.

System Industries Announces Billion-Byte Storage Systems

SUNNYVALE, Calif. – System Industries has announced it will expand its Series 9500 line of disk storage systems with two models, the 9500-64 and 9500-66, offering minicomputer users up to 1.2 billion bytes of storage at an average access time of 30 msec.

To implement the billion-byte storage system, System Industries connects four Control Data Corp. storage module drives (Model 9766) to its proprietary controller, which handles many software routines in hardware. The controller also automatically matches the performance of slower CPUs to the 1.2M-byte transfer rate of the CDC drives.

The Series 9500 line, with the new additions, will offer minicomputer users a choice of the four latest storage module drives developed by CDC.

These CDC drive models are the 9760 (40M bytes), the 9762 (80M bytes), the 9764 (150M bytes) and the 9766 (300M bytes). Up to four of the CDC drives may be implemented with the System Industries controller.

Regardless of which combination of drives the minicomputer user chooses, the Series 9500 provides a dual CPU interface option, whereby two minicomputers can share access to all disk drives attached to the controller. This option also allows communication between the two minis via the controller.

In single-unit quantity, the billion-byte storage system (9500-66), complete with controller, power supply, minicomputer interface plus all necessary cables and rack-mounting hardware, is priced under $60,000.

Also included with each system is a complete diagnostic software package and the option to select additional packages which allow the use of the minicomputer manufacturer's operating system software.

The company reports the models will be available beginning in March from its headquarters at 535 DelRey Ave., 94086.

Users Can Now Lease IBM 5100 From TSR

GREAT NECK, N.Y. – Users who are interested in IBM's 5100 portable computer but prefer to lease the device, can do so from Time Sharing Resources, Inc. (TSR) here.

While IBM offers the 5100 as a purchase-only system, TSR will provide three-, four- or five-year full-payout leases.

The APL time-sharing company also provides installation help and optional software, a spokesman said.

The 36-mo leasing rate is based on a monthly charge of $34.93 for each $1,000 of the system's purchase cost, a spokesman said.

A 48-mo lease rate is about $28.21/mo per $1,000 of purchase price, and the 60-mo rate is about $24.26/mo per $1,000 of system purchase price.

IBM maintenance would add $55/mo to $85/mo to the price.

TSR, which has financing for the project from the Chemical Bank, hopes the leasees will eventually become customers of its time-sharing service, the spokesman said from 777 Northern Blvd., 11022.

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Based on 8200 Mini

NCR Has Small Hospital Turnkey System

DAYTON, Ohio – NCR Corp. has introduced an interactive computer system with multiprogramming capability for small hospitals and clinics.

Called the NCR Interactive Health Care Information System (Ihis), the system offers six integrated application programs providing for patient processing and general accounting. Built around an NCR Century 8200 minicomputer, the system includes a central processor, terminals, matrix printer and disk unit.

The Ihis system provides a combination of data base, interactive and multiprogramming techniques in a turnkey system for the smaller health-care facility, according to an NCR spokesman.

All data is entered through CRTs. The data is verified and posted to the files involved. The terminals are also used to retrieve information from the system, either on the CRTs or in printed form.

NCR can tailor applications and files to the user's individual requirements using special software called an Application Customizer, the company said.

One or all of the six application programs may be used, depending on customer needs. Step-by-step "lead-through" instructions are flashed on the CRTs to obviate extensive operator training, NCR said.

The six on-line applications are: inpatient processing, outpatient processing, patient accounts receivable, health care accounts payable, health care payroll and health care general ledger.

All applications are programmed in Cobol 74 and operate under the Interactive Multiprogramming Operating System.

The basic 8200 configuration required for the system includes a 40K processor, one matrix printer, one visual display terminal and a 4.9M-byte disk unit.

Memory can be added in increments of 8K up to 128K. As many as seven CRTs and two printers can be added to the basic configuration.

An entry-level hardware configuration sells for $35,420 and rents for $860/mo under a five-year contract. Application modules are separately priced, with monthly license fees of $10 to $30 a month. The modules also carry an initial one-time installation fee of from $250 to $500.

All six application modules, including the inpatient processing extension, rent for $110 a month.

Customer deliveries will begin in the second quarter.

MDB Links Printers, Interdata Computers

ORANGE, Calif. – A line printer controller that is software- and hardware-compatible with Interdata, Inc. minicomputers is available from MDB Systems, Inc.

The controller is a single printed circuit half-board that fits into any Interdata 15 in chassis, MDB said.

The controller costs $750 from the firm at 981 N. Main St., 92667.

Dataram Offers 16K, 8K Core For PDP-8 Line

CRANBURY, N.J. – Dataram has introduced the DR-118 and DR-118/A single-board 16K core memory systems for use with Digital Equipment Corp.'s PDP-8 minicomputers.

The Dataram systems are Omnibus-compatible and can be inserted directly into the backboard of the host minicomputer, Dataram said. The DR-118 is compatible with the PDP-8/E, -F, and -M, and the DR-118/A is compabible with the PDP-8/A-400 and the PDP-8/A-500.

The 16K by 12-bit and the 8K by 12-bit units cost $2,045 and $1,860 from the firm at Princeton-Hightstown Road, 08512.

Litton Memory Ups 704 Capacity

CANOGA PARK, Calif. – A core memory which is said to double the capacity of the Raytheon 704 processor within its chassis while using the existing power supply has been introduced by Litton Memory Products Division of Litton Industries.

The Litton LM-804 core memory is said to be the only add-in unit available that can increase the normal 704 maximum memory capacity from 16K to 32K.

The Litton memory has a capacity of 8K words by 18 bits word length or 4K words by 18 bits word length with a cycle time of 1 μsec and an access time of 300 nsec. It is available immediately from the firm at 360 N. Crescent Drive, 90210.

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Here are brief summaries of each course:

COURSE: HOW TO MANAGE STRUCTURED PROGRAMMING

This course answers important questions you may have about structured programming. Which structured concepts should be used in my organization? What standards should be set for structured programming? How does one organize a chief programming team? What kind of pilot project should I select? What problems can I expect? This two day seminar answers these questions and will help you introduce structured programming into your organization without getting your fingers burned. Course fee: $300. Dates and locations: Jan. 26-27, New York City; Feb. 2-3, Ottawa.

COURSE: HOW TO TEACH STRUCTURED COBOL

The philosophy behind this course is to give the COBOL programming instructor the educational know-how to teach structured programming to beginners. Familiarity with COBOL is required. The course handout includes Part I of Learning to Program in Structured COBOL by Ed Yourdon, Chris Gane and Trish Sarson. Course fee: $300. Dates and locations: Jan. 15-16, Washington, D.C.; March 18-19, Toronto; April 5-6, San Francisco.

COURSE: HOW TO BE AN EFFECTIVE DATA BASE ADMINISTRATOR

This course gives detailed guidelines to assist the data administrator in the organization and collection of corporate data; in the design of physical structure of the data base; in the creation of new data; in the expansion and reorganization of the data base; and the optimization of data base performance.

One of the major topics discussed is the data administrator's role in the corporate organizational structure. Problems are discussed and pragmatic solutions suggested. Course fee: $300. Dates and locations: Dec. 11-12, Washington, D.C.; Feb. 2-3, New York City; April 8-9, Chicago.

COURSE: HOW TO SELECT AND INTEGRATE ON-LINE SYSTEM COMPONENTS

Much of the emphasis in the designing of today's on-line systems is deciding which teleprocessing packages (CICS, INTERCOMM, etc.) should be interfaced with which data base packages (IMS, TOTAL, etc.) and which operating system. This newly revised and updated seminar deals with these issues as well as terminal selection, performance measurement, application programs, recovery and back-up, and the human engineering aspects of on-line systems. Course fee: $300. Date and location: Feb. 25-27, New York City.

For more information call Ms. Rikki Moss at Yourdon inc. 212 575-0572 or send this coupon to:

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Mini Bits

Wang 2200 WCS Systems Get Data Collection Board

TEWKSBURY, Mass. – Wang Laboratories has added a controller board that is said to provide a low-cost means for the company's minicomputers to acquire on-line data from digital instruments used in research and testing.

The Model 2252A scanning input interface controller plugs into any I/O slot in a System 2200 or WCS series CPU and accepts readouts with a sign and up to 10 binary-coded decimal (BCD) digits (or 40 binary data bits) in parallel, Wang said.

Compatibility with digital devices is aided by six logic-level-selection switches on the controller which allow signal levels to be inverted easily. The four number-of-digits switches can be set to indicate the exact number of BCD digits per readout, thereby reducing data transfer time for applications with fewer than 10 BCD digits, the vendor added.

Four control signals on the board, which indicate data request, data transfer in progress and data transfer complete, can be utilized or ignored by a particular device as required.

The Model 2252A costs $600 from the firm at 836 North St., 01876.

Randal Enhances Printer

TORRANCE, Calif. – Randal Data Systems is offering an enhanced version of the Decprinter I, a 180 char./sec line printer recently introduced by Digital Equipment Corp.

Options available from Randal include an RS-232 interface with 512-character buffer, a polling adapter and an additional 512-character buffer.

Standard Decprinter 1 features include upper- and lower-case 96-character Ascii output, 132-column print capability, ability to handle varying form widths (3 to 14-7/8 inches) and form sets up to six-part), paper-out switch, top-of-form, self test and backspacing capability.

The paper-feed system employs dual tractors with 4-pin engagement and a vernier knob for paper positioning.

The Randal printer costs $3,085 or $92/mo lease. With a buffered RS-232 interface, the printer costs $3,585 or leases at $108/mo.

First deliveries are in January from the firm at 2807 Oregon Court, Building F, 90503.

Tab Aims Decollators at Small Users

PALO ALTO, Calif. – Tab Products Co. is now offering two two-part forms decollators designed and priced specially for the IBM System/32, System/3 and small minicomputer systems users.

The tabletop Model 2422 will cost about $450. Model 2424, the floor model, depending on options, will "also be priced below competitive machines," according to Tab.

Both units are capable of decollating continuous forms at speeds up to 450 ft/min and are designed to take up a minimum of floor space, Tab said.

Tab is at 2690 Hanover St., 94304.

In French Medical Center

Mini Speeds Tests of Disabled Patients

VALENTON, France – A Data General Corp. Nova minicomputer installed at a medical research center here is playing its part in helping to restore disabled patients to a normal life.

The center is associated with the Centre de Reeducation et d'Appareillage, which specializes in the fitting of artificial lower limbs and the rehabilitation of patients.

Each year, some 800 patients pass through the rehabilitation center, which is run by the Association for the Development of Reparatory and Orthopaedic Surgery.

The Nova 1200 system is used with an apparatus for the analysis of a patient's walk based on measurement of its strength.

The examination process is conducted as follows: A disabled person's identity is typed on a printer along with the order for the process to begin.

The patient is then invited onto the walk-way and asked to proceed according to the required measurement, on to one of two boards.

The boards each have 10 sensors positioned to measure the pressure exerted on the board by the patient as he moves. This pressure is calculated for graphical analysis along x, y and z axes – two horizontal and one vertical.

The graphic information is recorded every 1/100th of a second. The subject's weight is analyzed to form the strength unit while the foot size gives the length unit for the displacement of strength.

The system supplies, for its part, numerical data allowing the graphs to be interpreted (time-length of step, weight of individual), the value of certain measurements calculated in comparison with those preceding and the exact meaning of certain significant variations in the curves. It gives an instantaneous numerical evaluation of the patient's walk by the analysis of the above measurements following a program adapted to a given problem.

This numerical evaluation of physical facts carried out for each examination and obtained by a parallel graphic translation constitutes an essential progression brought about by the integration into the system of a minicomputer and its printer.

Today from eight to 10 examinations can be made in one hour. The whole procedure, from the taking of measurements to their interpretation, demanded about six hours per examination in the past.

EASTERN SIERRA POLICE INFORMATION SYSTEM

Specs are available for bids on mini-computer hardware and RTDOS.

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Texas Instruments "Silent 700" programmable data terminals:

A price you can afford.
Performance you can count on.
And copy you can keep.

"Silent 700*" Model 742 programmable data terminals offer a lot more than mere intelligence for business management systems.

They give you a complete terminal package in locations where most business information is generated and used . . . such as remote offices, warehouses, stores or hospitals.

A quiet, self-contained thermal printer gives you a retainable audit trail of transactions for easy reference, routing and filing.

The simple TICOL language lets you generate your own user programs on the terminal itself, with no separate equipment or central computer support required.

And the same terminal package holds all the communications features and options you need to move data to and from your computer or other terminals.

Versatile "Silent 700" programmable data terminal offers easy operation and powerful options for many business management systems.

Cost-effective performance

Standard in each "Silent 700" programmable data terminal is the microprocessor and memory capacity to handle most user applications.

For applications requiring increased capacity, additional memory with a more powerful TICOL language can be added as an option in the same terminal package.

Dual magnetic tape cassettes let you store your programs and data conveniently, for later transmission to your computer.

And combined with these powerful performance features are quiet 30-characters-per-second printing speeds and communications features that help reduce over-all system costs.

Improving man's effectiveness through electronics

Turnkey Mini Untangles Textile Firm's Inventory

NEW YORK – "The textile industry has always had very serious difficulties keeping an accurate perpetual inventory," according to William Levin, president of Gold Mills, Inc., which has largely overcome the problem through the use of a minicomputer.

"In all too many instances," Levin continued, "what's on record does not match what is physically in the warehouse or sometimes, more importantly, what is in process. One then is confronted with an unpleasant surprise at inventory time."

Gold Mills uses an on-line interactive minicomputer system that not only maintains an inventory from moment to moment, but also produces significant cost savings in several different parts of the company.

In one department alone, cost savings with the minicomputer system are estimated at more than $75,000/year.

Built around three minis from Interdata, Inc., the Gold Mills system was installed and is managed on a turnkey basis by G&L Computer Corp. here.

The system links Gold Mills corporate headquarters here with its knitting and dyeing facilities in Pine Grove, Pa.

One of the problems of achieving an accurate inventory focused on that group of employees known as converters, men and women who convert a customer's order into appropriate manufacturing and distribution instructions for the Pennsylvania plants.

Prior to the installation of the mini system by G&L, it was possible for these converters, sitting at adjacent desks, to order out the same goods once, twice, even three times, Levin reported.

And it might then be weeks before the accounting department straightened out the paperwork to resolve the discrepancies.

"Now, a converter sits at a CRT that is on-line to the mini. Every transaction is entered into the system, which will then block any and all subsequent attempts to duplicate orders from another converter," according to Jules Grandonico, president of G&L.

Converters are by no means the only employees who are on-line to the system. Grandonico said the invoice department at Gold Mills headquarters formerly consisted of eight clerks, who were "always behind on their manual processing of paperwork."

Now, he continued, "one Gold Mills clerk and a terminal produce current invoices every day. Indeed, that one clerk usually finishes the day's invoices before the close of business."

Estimated net savings to Gold Mills in the invoice department alone were more than $75,000 each year, plus the added dividend of greatly improved performance.

Because the manufacturing plants in Pennsylvania operate three shifts per day, seven days a week, there is a never-ending flow of data to New York. "We never close," Grandonico said. "The system is always working."

At Gold Mills, the hardware in the G&L system includes three Interdata minicomputers: two Model 70s and one Model 5, each with 32K bytes of core memory. The Model 5 serves as the communications interface between the Model 70s and terminals in Pennsylvania and New York.

There are four 2.5M-byte disk memories, a 29M-byte disk memory and five matrix printers. The CRT terminals at the manufacturing plants in Pennsylvania and at Gold Mills corporate headquarters in New York each contain 2,000 bytes of intelligence in the form of read-only-memory (ROM).

Custom Features

They also have special custom-installed features such as a transmit light that locks the keyboard while the operator awaits a response to his most recent query or data entry.

The terminals in Pennsylvania transmit data to the Model 5 minicomputer in New York over two dedicated C-2 lines, each transmitting about 10M bytes of data per day at a rate of 3,800 bit/sec.

Similarly, data flows from the terminals in New York to the plants in Pennsylvania. Transmission rate within the New York headquarters from terminals to the Model 5 minicomputer, is 9,600 bit/sec.

Software for the minicomputer system at Gold Mills is based on a real-time operating system developed by G&L Computer Corp., which has also developed application packages such as inventory control, order entry, accounts payable, accounts receivable and invoicing.

CDC Memory Module Aimed at OEM Firms

MINNEAPOLIS – Control Data Corp. has introduced a core memory module for use by OEM builders of small computers and communications equipment and add-on memory suppliers.

The CDC Model 94320 core memory module is plug-compatible with the Ampex Corp. 1620 memory. The basic 16K by 20-bit module has a 750-nsec cycle time, 300-nsec access time and uses the recently announced CDC Unitemp core for constant operating temperature margins and reduced cooling requirements, according to the firm.

In addition to the basic unit, suppliers and manufacturers may choose 16K by 16-bit or 16K by 18-bit modules. Rack and power supply options also are available. Price for the 16K by 20-bit unit is $1,325 in OEM quantities. Deliveries will begin in the first quarter.

Systems network adaptability

If your business system involves tying your Model 742 terminals together in a complete communications network, TI offers the Model 700 TPS* Terminal Polling System.

Designed around the TI Model 960 Series minicomputer, the TPS automatically calls remote "Silent 700" data terminals, collects data stored on the magnetic tape cassettes, and logs the data on magnetic tape in a format readable by a host computer.

This scheme gives users a complete, cost-effective data capture network for distributive data processing and communications.

International Harvester dealers throughout the country use "Silent 700" programmable data terminals for quick, economical management of inventory and accounting data.

International Harvester found more . . .

International Harvester, which recently selected a large quantity of these models for use by its dealers for remote data entry and local processing in Service Parts Inventory Management and Dealer Accounting Data Services, has this to say:

"The TI terminal answers International Harvester's needs — simplicity of operation, nationwide service and the capacity to fill our dealers' requirements at a moderate price."

International Harvester dealers throughout the country will benefit from reduced information transmission time, better control of warehouse parts inventory and smoother daily operation with continually up-to-date information.

Model 700 TPS Terminal Polling System links the TI 960 Series minicomputer with "Silent 700" terminals for a complete data network.

What's your application?

If you're interested in an affordable solution for your distributive data processing and business management systems needs, contact the TI problem-solvers at the nearest office listed below. Or, write Texas Instruments Incorporated, P.O. Box 1444, M/S 784, Houston, Texas 77001. Or, call Terminal Marketing at (713) 494-5115, ext. 2126.

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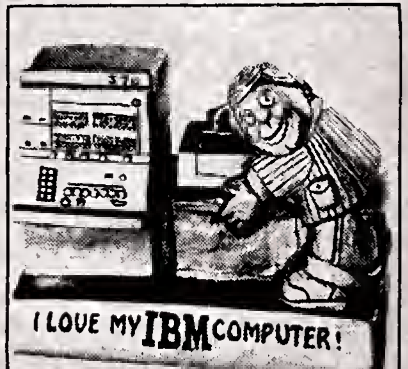

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Performance Evaluation and Improvement

Saul Stimler, author of *Data Processing Systems: Their performance, evaluation, measurement, and improvement* will lead this two-day seminar on measurement techniques designed to save your installation money. As well as system performance at your own installation, topics covered include: Criteria for quantifying performance, pencil and paper analysis of a system, Benchmarking techniques, Realtime, Batch and interactive time sharing systems.

Cost for the seminar, including continental breakfasts and luncheons and all course materials is $250.

San Francisco	**Dunfey's Royal Coach**	**Jan. 9-10**
New York	**Summit Hotel**	**Feb. 23-24**

How to Increase Programming Productivity

John W. Brackett, PhD, Vice President of SofTech, Inc., will lead this two-day seminar for technical managers on the state of the art of Software Engineering. Under his direction you will learn how to: create more precise and visible analysis and design; reduce integration problems; improve software reliability; incorporate visible outputs into the software development cycle; increase programmer productivity; and improve programming management methods. Topics covered include: Structured programming; Top-down analysis, design, implementation; and Chief Programmer teams.

Cost for the entire seminar, including continental breakfasts, luncheons, and all course materials is $300. Additional registrants from the same company are charged only $250.

New York	**Essex House**	**Jan. 26-27**

Data Base Design

Given in association with Leo J. Cohen and Performance Development Corporation, this three-day seminar is a package-independent examination of the techniques required for the design of effective data base systems. The seminar covers Effective Record Design, Physical Storage Techniques, Optimum File Organization/Indexing Techniques, File Integration, and much more.

Cost for the seminar, including course materials, continental breakfasts and luncheons is $350. Additional registrants from the same company qualify for a reduced rate of $300

Denver	**Denver Hilton**	**Dec. 1-3**

Legal Tools for Computer Contracting and Protection

Under the instruction of Roy N. Freed, a nationally known lawyer, author and educator in the field of computer law, you'll learn how to increase your advantage in dealing with vendors that supply your installation. As well as practical discussion and review of your own contracts, subject areas covered in this 2½-day seminar include: Negotiations, Contracts, Warranties, Avoidance and resolution of disputes, Security, Fraud, Taxation, and Techniques for handling any transaction. Cost for the entire seminar, including continental breakfasts, luncheons and all course materials is $325. Additional registrants from the same company are charged only $275.

Chicago	**Hyatt Regency O'Hare**	**Nov. 19-20**
Washington, D.C.	**Marriott Crystal City**	**Feb. 4-6**
Orlando, Fla.	**Sharaton Towers**	**Feb. 18-20**

Data Communications Course #1010 – Practical Data Communications Systems & Concepts

Dr. Dixon Doll, the nationally recognized teleprocessing consultant will lead this two-day seminar on the newest advances in data communications. The course covers areas like SDLC, HiD-LoD, DDS, newly approved major revisions to WATS, and the impact of Satellite Carriers.

Total Cost, including workbook, reference materials luncheons and continental breakfasts is $350. Additional registrants from the same company qualify for the reduced rate of $300.

Miami	**Marriott Miami Beach**	**Nov. 17-18**

Data Communications Course #1020 – Advanced Teleprocessing Systems & Design

Also led by Dr. Dixon Doll, this course is a follow-up to course #1010. Special emphasis is given to techniques that minimize operating costs in commercial data communications networks. This three-day seminar covers procedures, approaches, and algorithms for evaluating and cost-optimizing network operations. Total cost, including an extensive set of customized course materials, is $450. Additional registrants from the same company qualify for a reduced rate of $400.

Miami	**Holiday Inn Airport Lakes**	**Dec. 1-3**

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CI Notes

DPF to Lease Amdahl Units

HARTSDALE, N.Y. – Pursuant to its agreement with Amdahl Corp. to provide long-term lease financing for up to $160 million worth of Amdahl Corp. computers next year, DPF, Inc. has been negotiating with banks and other financial institutions.

Leases are expected to be five to seven years, according to DPF Chairman Bertram J. Cohn, who said the move to handle Amdahl equipment is part of an overall growth program DPF plans for next year.

DPF is prepared to invest some of its own funds in both operating and long-term leases, Cohn said.

On-Line Gets English Base

PITTSBURGH, Pa. – On-Line Systems, Inc. has completed the acquisition of Leasco Response Ltd. in the UK, marking the company's entry into the European computer services.

The newly acquired British company will be operated as a wholly-owned subsidiary and is expected to be renamed On-Line Computer Services (UK) Ltd., On-Line President Jack Roseman said.

Memorex OEMs Components

SANTA CLARA, Calif. – Memorex Corp. has expanded its thrust into the OEM world by including equipment components such as disk drive heads, printed circuit boards and cables in its lines of products.

Robert J. Chartrand was named OEM components marketing manager.

Memorex previously sold these components for OEM application on a limited scale.

Ball Buying Caelus Disk Line?

SUNNYVALE, Calif. – Ball Corp. has reportedly purchased the 40M-byte and 80M-byte disk lines of Caelus Corp. here from Electronic Memories and Magnetics Corp.

Under the deal, which will be announced early next month, Ball will take over the Caelus plant and personnel here, sources said, and will market the disk units through Ball Computer Products.

Calcomp Drops 6,250 Bit/In. Effort

ANAHEIM, Calif. – Count California Computer Products, Inc. (Calcomp) out of the 6,250 bit/in. tape drive arena.

President Lester D. Kilpatrick told shareholders, "It is recognized that under present conditions Calcomp is capital-limited and that operating in a positive cash flow mode must take precedence over revenue and product growth . . . Calcomp has narrowed its product lines to the memory and graphic areas where our strength is greatest," he said.

Cites Small Market Share

Lacey Explains CDC's Profit Picture

By Edith Holmes
Of the CW Staff

NEW YORK – Control Data Corp.'s poor showing in the area of profits since its founding in 1957 is attributable to too small a market share among other factors, John W. Lacey, senior vice-president, said recently at hearings of the U.S. vs. IBM antitrust case here.

Lacey said although revenues indicate an impressive growth at CDC, "in terms of profits and fair share return to stockholders, the growth looks very bad."

Other factors affecting CDC's profit level are the lack of an image of success and reliability cemented in the minds of potential customers and a failure to achieve the economies of scale that participation in the industry demands, he said.

In contrast with CDC, IBM has derived its power in the marketplace from these very areas, he said.

Lacey estimated CDC holds a 2% to 4% share of the market, with IBM at 60% to 70%.

Growth First

The objective within CDC was growth first and profitability second until 1971-1972 in order to achieve certain economies of scale, he said.

Difficulties in financing and obligations to shareholders among other factors have led to a shift in emphasis from revenues to profits, he said.

Over the past five years, CDC has had trouble acquiring financing, according to Lacey. While not directly responsible for financing in CDC, Lacey said in 1971 and this past summer banks headed by Chase Manhattan had told CDC it could expect very little additional financing unless and until its profitability went up.

CDC suffered "a significant loss measured in 10s of millions of dollars" from the sale and lease of its computer systems in 1974, Lacey said.

Pricing Procedures

He illustrated the influence IBM has on CDC by detailing his company's pricing procedures.

At CDC, general pricing guidelines take the prices of other manufacturers into consideration, but are chiefly concerned with those of IBM, Lacey said.

On an average basis, CDC prices its systems 5% to 10% below those produced by IBM, Lacey testified, although this does not happen in every case. He noted the difficulties of comparing products in a high-technology market like computer systems.

CDC will be 40% higher or 40% lower in some instances when compared with IBM pricing, depending on the problems the customer needs to solve and the power he must have to accomplish these tasks.

Lacey said CDC reviews and reevaluates its prices when the volume sold or the manufacturing costs change or when there is a competitive shift in price – particularly if it is initiated by IBM.

In pricing peripherals, CDC is generally 10% to 15% below IBM, adding that in the plug-compatible market, comparisons between equipment abilities are much more objective than in assessments of the relative powers of systems.

CDC has tried to reduce the price differential between CDC and IBM equipment in this area, especially with its add-on memories, he said, adding the company has not been successful in this effort.

IBM Blames Unsuccessful Ventures

Attorneys for IBM attempted to show CDC's computer systems business was great enough to allow the company to engage in several unsuccessful- or profitable-in-the-long-run ventures.

In addition, they attempted to prove CDC incurred losses by engaging in these ventures rather than through competitive clashes with IBM.

Lacey was questioned about several ven-

(Continued on Page 46)

Report Highlights Industries With Large DP Growth Potential

By Nancy French
Of the CW Staff

WALTHAM, Mass. – Eighteen industries show an untapped DP spending potential ranging from a low of $200 million to a high of $2.7 billion, according to a study completed here recently by International Data Corp. (IDC).

Of these, hospitals, commercial and stock savings banks, automotive dealers and supermarkets show a total spending potential of $4.8 billion, the report said.

Hospitals are in the lead, according to "Target Industries for Computer Services and Minicomputers," with almost $2.7 billion in spending potential. This figure is 4.6 times that of commercial and stock savings banks, the next highest market, the report said.

IDC researchers arrived at these estimates by measuring 1974 DP spending in organizations from key Commerce Department Standard Industry Classifications (SIC) that budget from $10,000 to $200,000 per year for DP activities.

Spending levels of organizations at individual 2-, 3- or 4-digit SIC levels were compared with spending for those industries' most progressive organizations to determine DP spending potential, an IDC spokesman said.

"Hospitals [SIC 806] are a long way from realizing the $2.7 billion potential, however, because only a few currently spend at the $7/patient-day rate of the most sophisticated DP users, and many of the smallest ones might never justify it," the report said.

Commercial and stock savings banks (SIC 602) are far more thoroughly penetrated, and some of the $587 million remaining potential will be erased by 1974 DP spending by correspondent banks, the report said.

However, increasing development of electronic funds transfer systems (EFTS) will boost the total potential significantly during the next few years, the report said.

IDC's estimate shows a $496 million untapped market in the automotive dealers category (SIC 551) but cautioned that the report measured current spending on in-house, general-purpose computers, and since auto dealers tend to rely heavily on computer service organizations, rather than in-house DP, the potential found here may be "slightly overstated," the report said.

Supermarkets (SIC 541) are on the brink of big point-of-sale decisions, according to the report. Nearly $447 million in potential DP spending exists in the supermarket area, the report said.

SIC categories 13 and 29 of the oil, gas and petroleum industry still show nearly $360 million in DP spending potential, the report said.

Department stores (SIC 531) show $356 million in DP spending potential, and savings and loans, $346 million.

In the insurance industry, fire, marine and casualty insurance (SIC 633) still represent $307 million in DP spending potential, compared with the more highly automated life insurance firms, which have less than half this potential, according to IDC.

Saturated industries mentioned in the report include sugar and confectionary manufacturing, the weaving and finishing industry, household appliance manufacturing and the paper products industry.

A chart of total 1974 U.S. DP spending included in the report indicated that DP spending by manufacturers represented 34% of last year's DP business, and that of financial institutions, 22.5%. Education was third, with 9.7%, and retail fourth, at 7.1%.

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RAYTHEON

GE Lacked Management Commitment to DP: Weil

By Edith Holmes
Of the CW Staff

NEW YORK – General Electric Co. (GE) lacked management commitment necessary to continue in the computer business, according to Dr. John W. Weil's testimony here recently at the U.S. vs. IBM antitrust trial.

GE's management believed a company had to have at least a 10% to 15% market share of the computer industry to be successful, but GE had held between 2% and 4% during the 1960s, said Weil, formerly in charge of Advanced Systems Technology with GE's computer department.

One major reason behind GE's decision to sell its computer business to Honeywell in 1970 was the belief it would not attain such a market share, said Weil, the first of four witnesses who will testify about GE's sojourn in the computer industry.

GE had devised many ambitious tasks and attempted efforts often over its head technically, he said. The firm never developed a management experienced enough in the computer industry to understand it, Weil said.

Nuclear Power Commitment

He illustrated his former company's lack of commitment to computers by comparing its interest in developing nuclear power.

Consisting of no more than 1% to 3% of GE's total business, computers were always considered a sideline – a business the company could easily get along without if resources became scarce or profits dipped, Weil said.

By contrast, GE was a strong supplier of equipment to the power industry, and any development of nuclear power without GE's active involvement would have threatened its entire operation, he added.

Weil noted that in the early '60s the company couldn't seem to keep a manager in charge of its computer business for more than 18 months at a time.

No one with responsibility for computer systems ever achieved a sufficient understanding of the industry to know what to do, Weil said.

While GE's notion of management as a profession worked well in pure industries and in those that were growing slowly or gradually, it did a disservice to the company's computer business, he said.

Weil said back in 1963 he believed GE had the capital resources and technological capabilities necessary to make it a major force in the computer systems business and in the industry as a whole.

The company had a broad technological base in many different businesses applicable to computers. It had used computer systems broadly itself and so understood the problems encountered by users as well as anyone, he said.

At that time, GE had the capital resources available to successfully put together a technological and marketing effort in this field, Weil explained.

Naive in Manufacturing

The company was relatively naive with respect to the discipline required to manufacture large computer systems, he said.

Weil testified that, in retrospect, GE realized it had gotten in over its head with its contract with MIT to develop an advanced time-sharing system inthe '60s.

In conceiving and specifying the system features for Multics and the GE 645 mainframe, MIT assumed the position of leadership, and GE underestimated the difficulty it would have in actually building the necessary devices, Weil observed.

The system did eventually operate in the way it was intended to, he said, but when it did get off the ground, Project Mac was three years behind schedule. There were two major problems, according to Weil.

One was technical in that the tasks were very sophisticated for their time – very much state of the art, he noted. The other consisted of the communications problems faced when an industrial organization, a utility and an academic institution tried to work together on the same project, Weil added.

The former GE executive testified the 645 was removed from the market shortly after its introduction in 1965, and GE never again offered it as a product, although Honeywell did later on.

Weil added he was certain GE lost money on the project.

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CDCer Cites Reasons For DP Profit Scene

(Continued from Page 45)

tures that have caused CDC financial problems and that, in some instances, continue to do so.

Among the projects he was asked to discuss were CDC's acquisitions of C-E-I-R, Inc. seminar operations and Ticketron. IBM attorneys also asked about CDC's data centers operations, a contract with the Union Bank of Switzerland, and advanced logistics systems project for the U.S. Air Force and CDC's Star program.

CDC saw these areas as the wave of the future for DP, IBM counsel contended. If CDC lost money on these ventures, it was because their time had not yet come, rather than that CDC had suffered from IBM's market power, the defense attorney tried to show.

Lacey answered specific questions on each of these projects, but would not assent to the overall sense of what the defense wanted to prove.

When asked whether he considered leasing or selling systems more profitable, Lacey said he had no view on the matter.

On the surface, gross profits over the years are higher for leasing than they are for purchasing, he noted.

Many systems introduced in the early 60s are still being leased by customers and considerable revenue associated with these systems has yet to be obtained by vendors.

"No one will know the full answer to lease vs. purchase profitability until those systems are no longer in the market," Lacey said.

In addition, there is considerable debate as to the extent to which marketing and research and development expenses are most profitably expended on the lease or the purchase base.

Lacey said he had debated the whole question heavily in his mind, but has reached a point where he cannot draw conclusions.

Something Old, Something New In CDC Cyber 170 Series Systems

By Molly Upton
Of the CW Staff

ARDEN HILLS, Minn. – In its Cyber 170 series, Control Data Corp. has retained some features of its earlier products such as refrigerant cooling and twisted paired wire, but has also instituted the use of integrated circuits in the central processors of all but its largest model, the 175.

CW at CDC

All machines in the series use refrigerant cooling as one of the key factors in reliability of integrated circuits is the junction temperature, said Mike Guilfoyle, senior consultant in the Computer Development Division.

CDC continues to use twisted wire, he said, because the firm has "always stressed process performance" and this technique helps avoid sensitivity to noise and timing anomalies.

The systems use semiconductor memory, and Models 172, 173 and 174 have integrated circuitry for the CPU, he said, while the 175 uses high-speed discrete transistors.

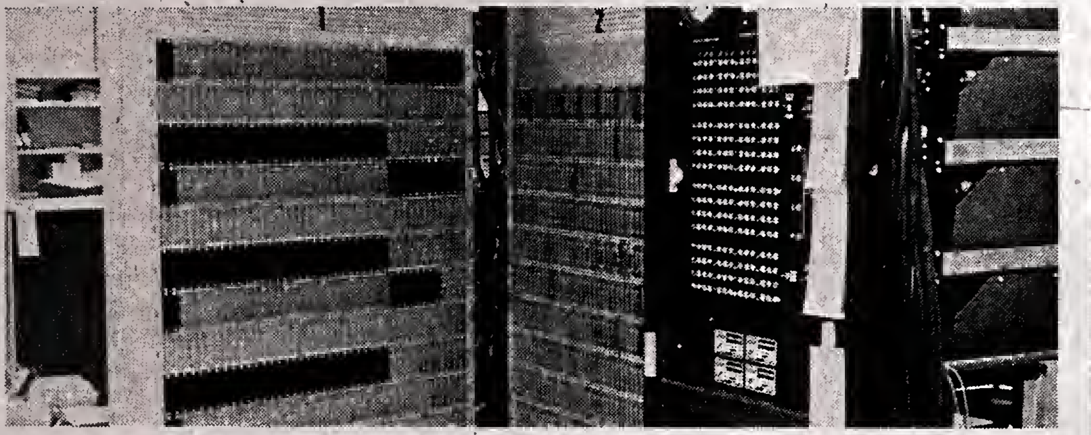
The Cyber 170 series, a replacement for the 70 series, offers increased performance to each equivalent model of the 70 series, he said.

The Cyber 170 series offers users the ability to be unaffected by power disruptions of up to 2.5 seconds through flywheel techniques.

With the advent of the 170 series, CDC has brought back to the U.S. overseas assembly work, Guilfoyle said.

CW Photos by M. Upton

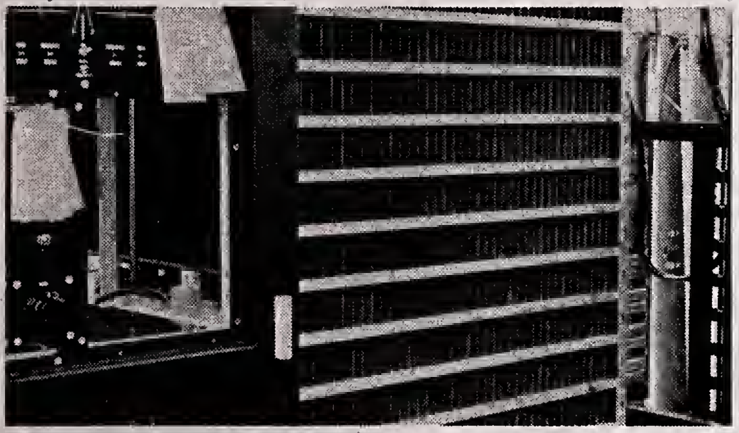
Yes, computers are still made by people. Backaching job of wiring is done by hand on the larger boards since the semiautomatic machines cannot handle these.



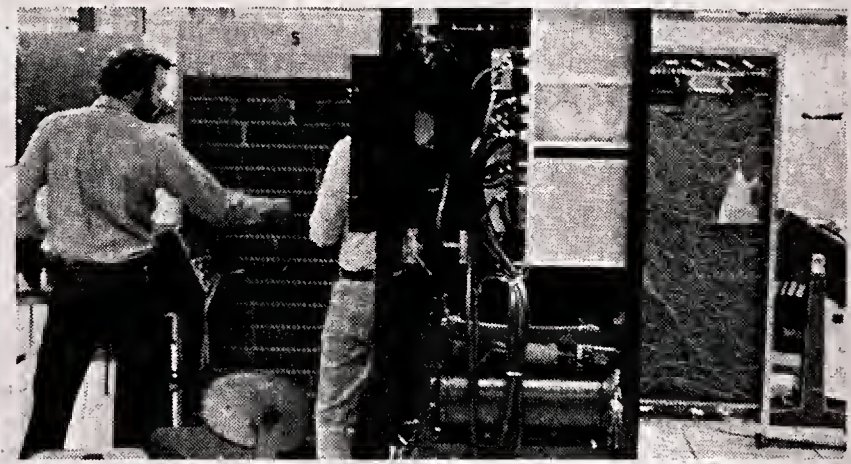
One bay of a Cyber 175, the largest in the series. On the left is one of two chassis of central memory. The peripheral processor chassis, which contains 10 small processors handling I/O and other functions, is on the right. Maximum configuration of a 175 is 20 peripheral processors and 256K words main memory. Two 175s have been shipped to customer sites in the U.S. and Germany.

Miles of wires, some of which are color-coded, are shown.

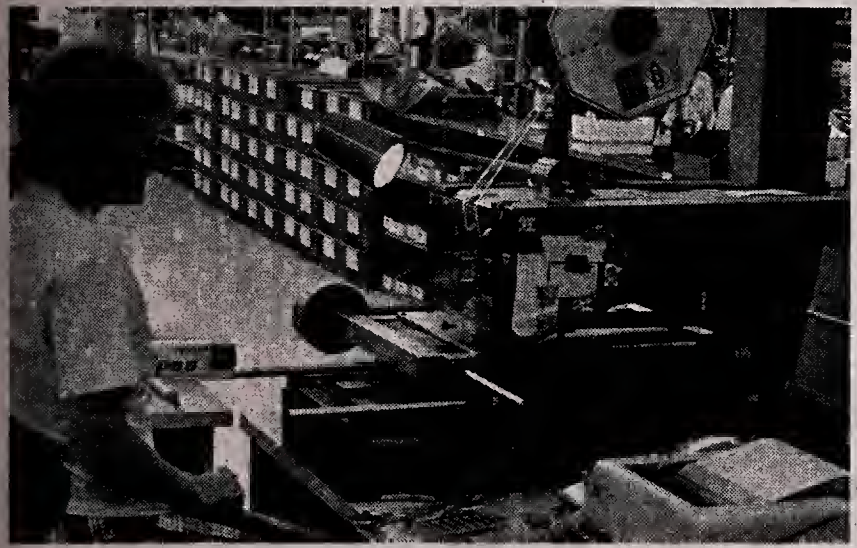
A Cyber 172. On the left is memory control and interface for extended core storage, which runs between 125K to 10M words. The central processor is on the right, with integrated circuit memory.



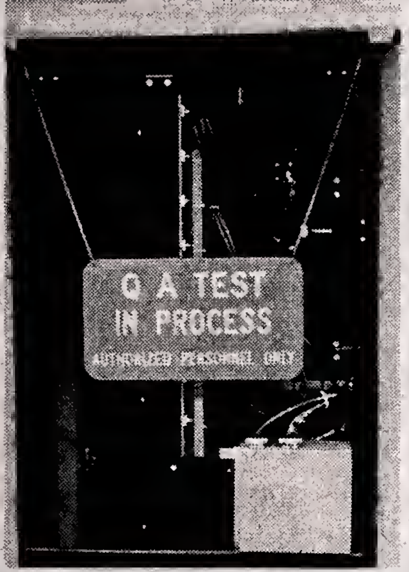
Chassis illustrates refrigerant cooling technique. The horizontal bars conduct the Freon through the machine, and the coolness is transmitted by the vertical pieces.

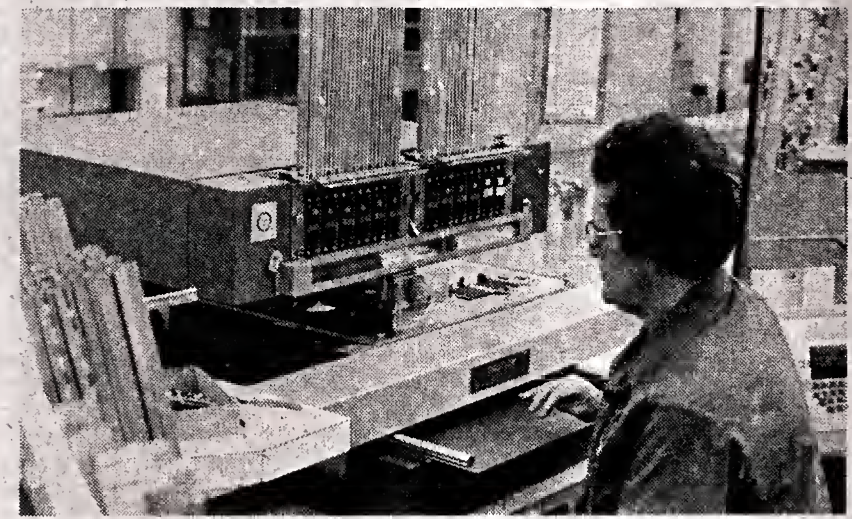


Dual processor Cyber 174 is being worked on. This model has 20 peripheral processors and main memory of 256K 60-bit words. Each word has 8 additional bits of error correction.



Machine stuffs capacitors.





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Trade Balance Shrinks; DP Imports Outpace Exports

WASHINGTON, D.C. – Although the U.S. balance of trade for the first half of this year was positive, it declined 2.9% from the balance for the same period a year ago.

Increases in imports, including those in the area of computer and related equipment, and a leveling off of exports were cited as causing the declining balance.

Exports of computers and related equipment rose 2.7% during the first half, to $1.1 billion, but imports of computers and related equipment rose 16.7% to $63 million compared with $54 million in the same year-ago period, the Commerce Department said.

The U.S. showed a favorable balance of trade of $828.6 million during the first half of this year, compared with $853.3 million in the first half of 1974, according to the Department of Commerce figures.

Exports of all commodities were about $1.3 billion, the same as in the first half last year, but imports rose 5.3% to $494.2 million, Commerce said.

Computers' Share

Computers and related equipment accounted for 83.2% of total U.S. business machine exports during the first half, with Canada the biggest customer, taking $151.7 million worth of equipment, the Commerce figures showed.

The second largest purchaser of this type of merchandise was the UK with $148.8 million, followed by West Germany with $127.1 million, France with $114.9 million and Japan with $97.5 million.

The European Economic Community was the largest supplier of business machine imports to the U.S., with $168.8 million or 34.2% of the total for the first half, an increase of 20.1% over the same period last year.

Japan sent $127.1 million, down 10%, while Canada sent $48.3 million, down nearly 4% from its year-ago figures, according to Commerce.

Imports from the Far East were valued at $172.7 million; from Latin America, $59.3 million; the Near East, $6.1 million; and from socialist countries, less than $50,000, the figures indicated.

The European Economic Community bought $591.9 million or 44.8% of total U.S. business machines exports, an increase of less than 1% over the first six months of 1974. The Far East purchased $160.1 million; followed by Latin American countries, $128.4 million; the Near East, $25.2 million; and socialist countries, $18.1 million, Commerce figures indicated.

Exports to Canada declined 5.2% to $196.5 million. Purchases by Japan of $105.2 million declined 23.7% from the same period a year ago.

Slicing the figures another way, the U.S. high-technology, electronics-oriented industries showed a favorable balance of trade of $1.4 billion for the first half, a gain of 44% over the year-ago figures, Commerce said.

The improvement was the result of a larger reduction in imports that counterbalanced a slight decline in exports, Commerce said.

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But Money Lacking

Analysts Like High Technology

MONTEREY, Calif. – Financial analysts are still enamoured by high technology – but they feel there is less money available today to start new technology-based businesses.

These are two conclusions of a poll of financial analysts who attended a recent conference here sponsored by the Western Electronics Manufacturers Association (Wema).

"Forty-three – or 93% of those responding – said that technology still has a special appeal to the financial community," said Joseph Radoff, vice-president of Simon Public Relations, which conducted the survey.

Breaking down the financial community into five subsections, 28.5% of the analysts felt sophisticated investors were most receptive to new technological concepts. Institutions were ranked as the next most likely source of investment, with 26%. Fund managers were rated 24%.

"Surprisingly, small individual investors with 11.5% ranked higher on interest in new technologies than did brokers, who showed only 10%," Radoff noted.

Half of the analysts said there was money available for new technology ventures – and another 12% said there were limited funds that could be obtained by the "right man with the right reputation." But only 38% felt money was in greater supply now than it was a year ago.

What motivates an analyst to begin following a company? A new technology, the potential of the stock, a new development in a firm and a change in the size of the company were all factors.

The analysts' leading source of information about technology is the company officer, followed by trade publications, company scientific personnel, the financial press and various scientific journals, symposia and technical papers.

ACM Gets Rights From CII To Use Sensor Technology

GOLETA, Calif. – Applied Magnetics Corp. (AMC) has signed an agreement with Compagnie Internationale pour l'Informatique (CII) in Paris for the rights to CII's thin-film magnetic sensor technology.

The agreement gives AMC the right to use the technology as well as the proprietary process needed to manufacture the multiturn, thin-film electromagnetic sensors used in magnetic heads.

AMC will sell the product in the U.S., the Far East and Western Europe.

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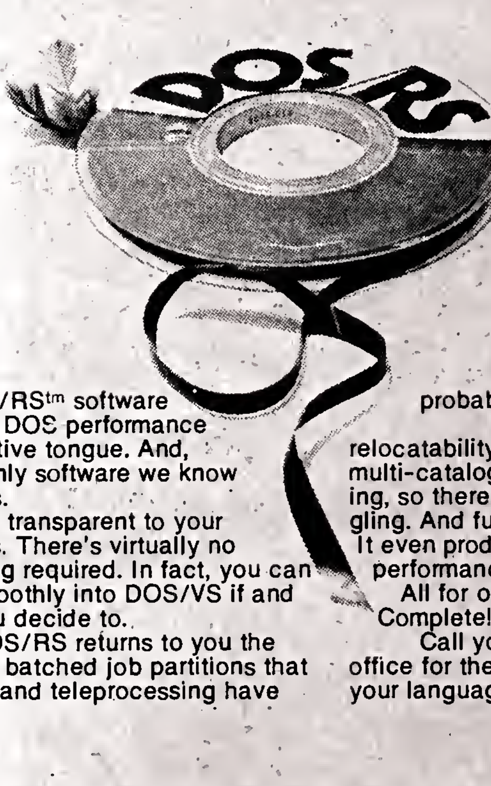

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CompDesign Takes OEMs on Spring Tour

NEWTON, Mass. – OEM suppliers will have an opportunity to display their products next spring at CompDesign/76, an OEM tour of Boston, New York, Chicago, Los Angeles and San Francisco.

The show will include designer forums, a product exposition and exhibitor product seminars.

The designer forums will consist of opening sessions with editorial material and remarks by *Computer Design* magazine, sponsor of the show. These remarks will be followed by concurrent workshops that cover subtopics of a daily theme.

The opening day's theme will be "Business Topics for the Computer Product Manager." The theme of each second day will be "Peripherals for Mini- and Microcomputers" and the third day will concentrate on microprocessors.

In addition, product seminars conducted by exhibitors will cover topics such as mini and microprocessor applications, switching power suppliers, software systems, test procedures and peripheral interface technology.

CompDesign/76 will join with the Computer Caravan in the five-city tour, sharing facilities and taking advantage of logistical and promotional economies.

The 1976 schedule includes Boston, March 2-4; New York, March 9-11; Chicago, April 13-15; Los Angeles, May 4-6; and San Francisco, May 11-13.

The tour is being managed by The Conference Company, 797 Washington St., 02160.

Del. Court to Hand DCC Injunction Barring Use of DG Logic Drawings

NEWCASTLE COUNTY, Del. – Chancellor William Marvel of the Delaware Chancery Court has ruled Digital Computer Control, Inc.'s (DCC) use of Data General Corp.'s (DG) maintenance logic drawings for the Nova 1200 in the design of DCC's D116 is improper.

When signed, the ruling will permanently enjoin DCC "from the use of Nova 1200 and D116 logic drawings for the purpose of manufacturing computers substantially identical to the Nova 1200."

DG initiated a suit against DCC in 1971 charging it with wrongful appropriation of proprietary information for use in manufacturing an identical product. In 1973 DG again filed against DCC, charging it with patent infringement on two counts.

The court indicated there will be a separate trial on damages. DCC said it believes such damages, if awarded, will not exceed $100,000.

DCC to Appeal

DCC President John N. Ackley said the firm intends to appeal the ruling immediately after the Chancery Court signs its order.

DCC expects to conduct "business as usual," Ackley said.

He pointed out DCC is not enjoined from manufacturing, since the logic drawings are not used in the manufacturing but in the design of the D116.

However, should the company be prevented in the immediate future from manufacturing the D116 or should an award of substantial damages be made, material adverse effects in future operations would result, DCC said.

'Trivial and Obvious'

DG has two patents on its Nova 1200, Ackley said. He termed "trivial and obvious" the one covering the duplication of accumulator memory.

The other patent covers a front panel switch circuit, which DCC does not employ in its D116.

The D116 accounts for a high portion of DCC's business, Ackley said, but this should change because the firm has several new products out.

Heads Named at STC, ACT Unit

Executive changes continue apace this fall, with Storage Technology Corp. (STC) naming a new president and Dick H. Brandon joining Advanced Computer Techniques (ACT).

Jesse I. Aweida, STC chairman and chief executive officer, has vacated the president's chair for Victor A. Casebolt, formerly general manager of General Electric's Utility & Process Automation and Instrument departments.

Two STC executive vice-presidents have left the firm: Gene Prince, in operations, and James Dutton, in field operations.

ACT has named Dick H. Brandon as head of the commercial sector of the firm, which will be consolidated in a separate organization, ACT-Brandon Co.

Brandon will be president and chief executive officer of the new unit and will also be a director of the parent company.

Brandon founded Brandon Applied Systems and most recently served as chairman of that firm.

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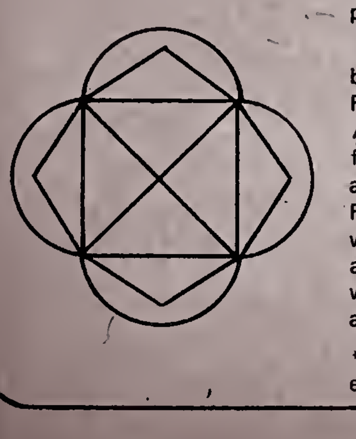

Draw this figure without crossing or retracing any lines and without lifting pencil from paper.

Entries for the contest or drawing should be on company letterhead mailed directly to Radley Communications Ltd., 380 Madison Avenue, New York, N.Y. 10017. Drawing for the IN-DEX system will be held February 2, 1976, at noon, in the offices of Radley Communications Ltd. (qualifying winner responsible for installation charges and travel expenses if applicable). Winners will be notified by mail. *Winner's names available upon request.

*Opinion of the judges will be final for either contest.

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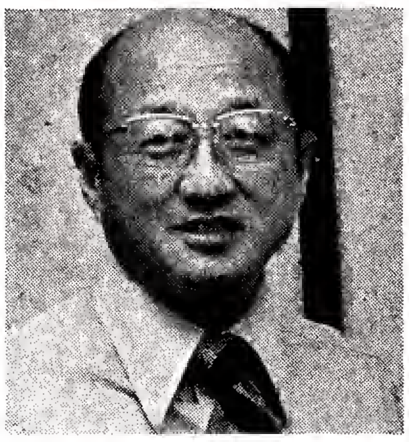
At Data Disc

Trend to Hybrid Disks Seen Developing

By Molly Upton
Of the CW Staff

SUNNYVALE, Calif. – With IBM setting the pace, there should be increased movement toward hybrid fixed- and moving-head disks among disk makers, according to Esmond C. Lyons Jr., vice-president of marketing at Data Disc, Inc.

This could have a severe impact on fixed-head disk makers because it will reduce the cost but retain some of the advantages of fixed-head disks, such as quick access time and reliability, he said.



James Woo

The hybrid disk would either have one fixed-head disk and one moving-head disk, or part of one platter would be fixed-head and the other moving-head, Lyons explained.

A hybrid system would enable a user to get fixed-head capability for slightly more money, he said, rather than having to add a separate system for fixed-head disks.

It would be easier to put moving heads on fixed-head technology than vice versa, he observed.

In the past, the principal market for fixed-head disks has been process control, where reliability is critical, he said.

Pursuing POS Mart

Data Disc intends to pursue the point-of-sale (POS) market, James Woo, president, said.

The company intends to design a product for the POS marketplace, where systems are often located in non-DP environments but the need for reliability is great, Woo said.

In a reversal of the industry norm, the electromechanical parts of Data Disc's fixed-head drives are more reliable than the electronics, Lyons said.

Fixed-head disks are more reliable than moving-head disks because they are constantly rotating, eliminating the accelerations that cause wear on the electromechanical portion of moving-head disks, he explained.

Mean time between failure of fixed-head disks and controllers is somewhere around 14,000 hours, he said, compared with between 2,000 and 4,000 hours for moving-head disks.

Fixed-head disks are generally of smaller capacity and cost more than moving-head disks, he said.

Data Disc has almost total vertical integration of its products, Woo said, including the manufacture of heads.

About five years ago, the firm had a reputation for offering low-cost and somewhat lower quality products, Lyons said. That has changed completely now because Data Disc concentrates on quality technology, he said.

The firm also makes graphics displays, which account for about 15% of its business, the Bright line of rack-mountable tape drives, which account for about 20%; and video disks, which account for 10%, Lyons said. Disk drives are about 55% of the firm's business.

Just as its disk drives are the fixed-head type, its tape drives are vacuum column. Most of the drives for the mini market are tension arm, he observed.

Data Disc announced a 125 in./sec vacuum column drive last May which, Lyons said, was the top of the line of rack-mountable drives.

The Bright line offers a broad range of products including a high degree of commonality, which appeals to OEMs, he said.

Data Disc's tape drive line should grow faster than its disk line, Lyons said, but it is also starting from a smaller base.

CW Photos by M. Upton

Esmond C. Lyons Jr.

The tape drives are becoming popular in computer output microfilm (COM) units, he said, because they are adaptable to either 7- or 9-track 1,600 bit/in. or NRZI formats, depending on which cards are inserted, he said.

A service bureau offering COM needs to be able to accept a variety of tapes presented by users, he added.

Although the fixed-head disk drive market has about seven or eight competitors grappling for a total of about $50 million worth of business, there is not the price competitiveness there is in other fields, Lyons said.

He explained this is principally because of the emphasis on quality rather than price.

T-Bar Forms Division To OEM Its Switches

WILTON, Conn. – T-Bar, Inc. has formed an OEM products division for mainframe and minicomputer users of T-Bar computer switches.

The new facilities and services are expected to lead to increased sales for an expanded range of manufacturers through the availability of plug-compatible switching equipment which will bulk reconfigure computer outputs to a wide choice of printers, displays, memory banks, disk controllers and front ends, according to John Tobey, products manager.

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Shugart Expects 1976 Sales to Climb to $9 Million

By Molly Upton
Of the CW Staff

SUNNYVALE, Calif. – Shugart Associates sales for fiscal 1976 may climb to $9 million compared with $2.5 million in the year ended last April, President Donald J. Massaro said.

"The floppy market has opened up in the last seven months," he said, adding the firm expects its shipments to climb from 1,500 drive/mo last August to 2,000 drive/mo in November and 3,000 drive/mo in January.

By way of contrast, the firm shipped only 600 drives in June.

Shugart has about 60% of the independents' market share on an installed basis and hopes to maintain 40% of the independent base, he said.

Competitors

The floppy disk drive race is narrowing to three principal competitors, he said: Shugart, Control Data Corp. and Century Data Systems, a unit of California Computer Products, Inc. (Calcomp).

In observing that Shugart is the only single-product firm among his list of the big three in the floppy disk field, Massaro said he would prefer that Shugart be known as the low-cost peripheral company.

Next Product

The next product will be a low-cost disk drive, he said, which will complement the floppy. "We try to concentrate on one thing and do it well," he said, and he defined that area as inexpensive rotating memories.

Shugart has begun shipments of its double-density drive, which he said has the same error rate as that of the single-density drive.

The Shugart unit doubles the linear density, with the same number of tracks and uses the modified modified frequency-modulation technique (M^2FM).

'Streaker Kit'

The firm offers a "streaker kit," consisting of the double-density drive and the formatter board, he said.

With single-density, customers generally prefer to do their own formatting.

Massaro said he foresees storage capacity on a diskette of 2.5M bytes. The next step is using both sides. The normal IBM-compatible diskette holds 250,000 bytes, he added.

Shugart, he pointed out, has considerable technical expertise in the form of patent holders for the original IBM floppy, the M^2FM technique, and the diskette, he said. It also makes its own heads and holds patents in this area.

On the Ropes

Shugart was on the financial ropes last October, when top management was evicted and the in-house R&D program was halted.

But the firm has been profitable since March and has a balance sheet that looks good from a cash standpoint, Massaro said.

In addition, it now has a $1 million line of credit from Wells Fargo Bank that is untapped, he remarked.

Many changes were made in that reorganization. In October the firm had three buildings; it now occupies one and has subleased another one.

Currently the firm employs about 105 people, 70 of whom are in operations, he said. Shugart can produce 3,000 drive/mo on a one-shift basis, Massaro added.

His emphasis since taking over in October has been to get to the breakeven point and improve the balance sheet, he said.

Making More Money

One of his first steps was to put the salesmen on a strong commission plan. He expects each Shugart salesman to make "significantly more than I make" this year, he said.

Within the last four months, the firm has established a cash incentive plan for management and key employees and a stock bonus plan by which it gives stock to employees."

"There are a lot of carrots hanging around here," he said.

Orders are up to such an extent that delivery time is getting to be around 60 days, he said. Delivery time used to be "when can I bring it over," Massaro added.

Direct sales account for about 95% of U.S. business, and Shugart is establishing a direct sales force in Europe, which will also use distributors.

It has distributors in England, Scandinavia as well as Japan. Shugart also licenses Matsushita to build its drives, he said.

REQUIRED LISTENING

Where did the GOTO go to? That's the subject of Yourdon's first State-of-the-Art Conference. Hear Jerry Weinberg, Larry Constantine, Bill Plauger, Tom Plum and Ed Yourdon speak on the first 10 years of structured programming. Enroll now.

THE CONFERENCE

Now there's a forum that can ground you thoroughly in the basic issues of structured programming. It's Yourdon's State-of-the-Art Conference. Three one-day conferences (New York City, Jan. 19; Boston, Jan. 20; and Chicago, Jan. 21) that will open a dialogue between you and five of the leading experts on structured programming.

Is structured programming right for your organization? Is it difficult to implement the technique? What are the real benefits for an organization like yours? All of these questions will be answered at the State-of-the Art Conference. Special emphasis will be given to the problems associated with starting up a structured programming project. This State-of-the-Art Conference is designed to help you through the throes of getting rid of the GOTO.

THE TEACHERS

The five State-of-the-Art Conference speakers are:

Jerry Weinberg — author of The Psychology of Computer Programming, An Introduction to General Systems Thinking and co-author of Structured Programming in PL/C. Jerry will speak on programming teams, structured walkthroughs and other related topics.

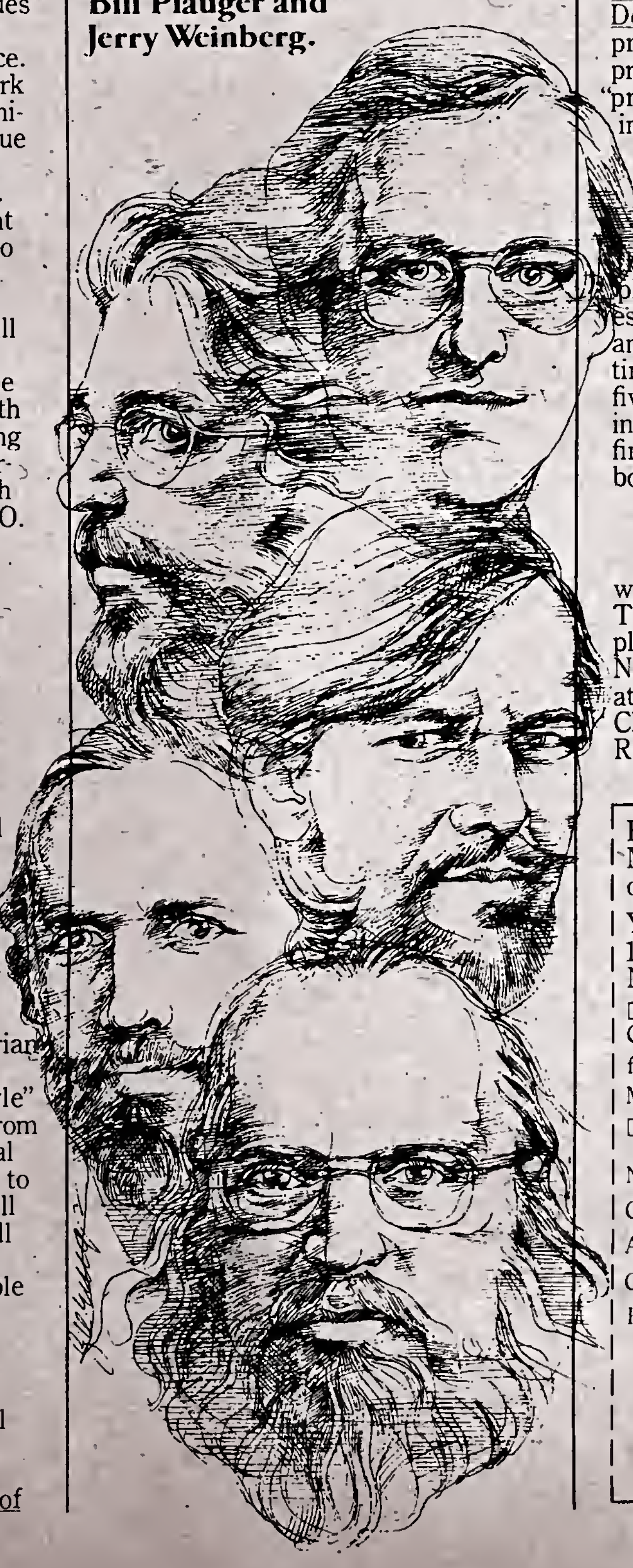
Larry Constantine — co-author of "Structured Design" in the IBM Systems Journal and co-author of Structured Design. Larry will speak on structured design and its impact on structured programming.

Bill Plauger — co-author with Brian Kernighan of The Elements of Programming Style, "Programming Style" "Examples and Counter-Examples" from the ACM Computing Surveys special issue on programming, and the soon to be published Software Tools. Bill will speak on programming style and will emphasize that eliminating GOTO statements does not ensure a readable program.

Tom Plum — co-author of "IF-THEN-ELSE Considered Harmful, "Teaching Structured Programming...by Example," and "Remedial Programming." Tom will serve primarily as moderator.

Ed Yourdon — author of Design of On-Line Computer Systems, Techniques of Program Structure and Design, and co-author of Structured Design. Ed will discuss the practical problems of implementing structured programming and the associated "programmer productivity techniques" in the typical EDP organization.

Ed Yourdon, Tom Plum, Larry Constantine, Bill Plauger and Jerry Weinberg.



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THE PARTICULARS

The State-of-the-Art Conference will be held in three different cities. This one-day conference will take place in New York City on Jan. 19 at the New York Hilton. In Boston on Jan. 20 at Howard Johnson's 57 Hotel and in Chicago on Jan. 21 at the Hyatt Regency Chicago.

The Conference is only $95.

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Printer Activity Abounds

There's a lot of activity in the printer area, judging from the quantity of news releases about printers and the admissions and indirect intimations of manufacturers planning to enter the printer business with units of their own design.

DOC 2250 Prints 2,250 Line/Min

MELBOURNE, Fla. – The latest entrant into the printer business is Documation, Inc., known for its card products, which has come out with the DOC 2250 impact line printer.

The unit prints up to 2,250 line/min with 132 print positions, single-spaced, using a 48-character set, for a price of $32,500 in single orders. Documation will sell the printer on an OEM basis.

Being in the printer business is a result of the firm's intention to expand in various areas of automated document handling, a spokesman said.

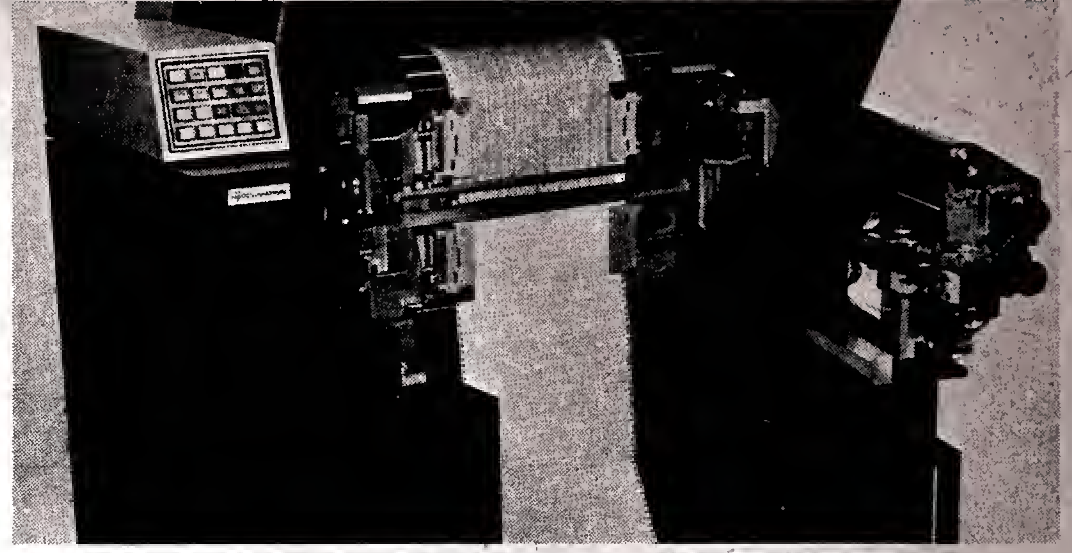
Documation makes its own print mechanism and developed the controller microprocessor, which communicates through its interface with the host system, decodes commands, controls the printer hardware and reports various errors and status, the firm said.

The DOC 2250 can handle up to six-part forms, with forms ranging from 3 in. to 24 in. length and has a paper slew rate up to 100 in./sec, the firm said.

Other standard features include: fully buffered print line, interchangeable character arrays and a universal character set buffer that allows any character set to be used, according to Documation.

A vertical forms-control buffer handles various forms sizes and determines either 6- or 8 line/in. A powered forms stacker is also included, as well as an acoustically insulated cover. There are resident microdiagnostics and maintenance is independent of the host system, the firm said.

Deliveries of the DOC 2250 are scheduled to begin in the second quarter. The firm can be reached through Box 1240, 32901.



DOC 2250 Printer

Dataproducts OEMs Components

WOODLAND HILLS, Calif. – Dataproducts Corp. has formed a unit for OEM sales of components, including the Mark IV print hammers, hammerbanks and Charaband, a horizontal font carrier.

The Components Management sector will be headed by Royce Lacey, director, who will report to Robert J. Pieper, vice-president of product management and support services.

The firm also formed a New Business Development organization, with Richard Ericson, vice-president, leading the effort to seek new business opportunities outside the company's present product line.

During the fall, Dataproducts restructured its marketing division in a move to reorganize part of the company along functional lines.

The product management of line printers was transferred from an operational profit-and-loss division to the Marketing Division and combined with customer service, technical support, and promotional activities, according to the firm.

Dataproducts said it has begun volume deliveries of line printers to Decision Data Computer Corp., which is marketing the printers with compatible interfaces to the IBM System/3.

Centronics Gets Print Head License

CROTON FALLS, N.Y. – Centronics Data Computer Corp. has been granted a nonexclusive license by the Matschke General Research Co., Inc. here on its wire dot matrix print heads, according to General Research.

The head is said to do "substantially more work" than the typical solenoid head and uses a "Z-rack" electromagnetic print component.

General Research plans to develop additional heads and to introduce next year its "D-Cell" electromagnetic print mechanism designed for general use with particular adaptation to serial communications work.

General Research can be reached through Box 577, 10519.

Centronics has established its second European subsidiary in West Germany, Centronics Data Computer GmbH. The move follows the dissolution of distributor arrangements with Core Computer.

Study Finds

DP Accepting Matrix Printing

WALTHAM, Mass. – "Matrix characters, composed of various combinations of dots, have gained rapid acceptance by the data processing industry," observed Fred Anderson, project manager for a study conducted by International Data Corp. (IDC).

Most mainframe manufacturers and scores of peripherals firms are offering at least one model of matrix printer, he added.

There is a possibility matrix character recognition (MCR) equipment may one day provide an alternative to more expensive optical character recognition (OCR) equipment, he suggested.

"Unlike currently available readers, the logic involved in the recognition of matrix characters would simply be the opposite of that used to generate the characters – dots would be sensed rather than printed.

"Further, the cost of MCR devices might conceivably be in the range of available matrix printers – only several thousand dollars vs. tens of thousands," Anderson said.

The IDC study reviewed matrix printer technology, looked at vendor strengths and weaknesses and estimated the size and growth of the market as well as possible approaches to matrix recognition.

Firms to Use Matrix Printers

As an example of the firms that have announced plans to use matrix printers, IBM's 3767 communications terminal will print up to 120 char./sec and join other matrix priners offered as part of the System/32, 3/6, 3270, 3600, 3650, 3740 and 3770 systems, IDC said.

Burroughs TC 5100s will use a 60 char./sec matrix console printer and GE offers a 30 char./sec matrix terminal with optional keyboard.

In addition, Tally has agreed in principle to partially manufacture and market a 120 char./sec matrix printer designed by Information Systems Italia. Logabax has opened a U.S. sales office, in addition to relying on marketing agreements with Sycor, Inc. and Control Data Corp., IDC said.

Singer Names Flavin President

NEW YORK – Changes have been happening throughout the ranks of Singer Corp. and its Business Machines Division at a fast and furious pace.

Starting at the top, Joseph B. Flavin replaced Donald P. Kircher as president, chief executive and chairman as of Dec. 1.

Flavin was executive vice-president of international operations at Xerox Corp. and a director of that firm.

Kircher is resigning because of health reasons, Singer said.

George R. Cogar replaced Richard O. Baily as president of Singer Business Machines Division. Cogar was president of Cogar Corp., a Singer subsidiary.

In making the appointment, Edwin J. Graf, chief operating officer, said "We're going to concentrate our resources and marketing efforts on the growing retail and terminal systems market. This permits us to capitalize on our strengths and allows us to cut overhead and other support expenses."

The immediate aim is to improve the division's performance as well as that of the total company, Graf said.

Answering charges Singer has been trying to sell its Business Machines Division, Graf avowed the firm intends to "roll up our sleeves and make it profitable."

Although the firm does not discuss divestments without specific developments, Graf said Singer would be realistic on the question of possible divestment.

Major Step

Cogar's appointment and the improvement program constitute "a major step in our action plan to put Singer back on the profit track," Graf said.

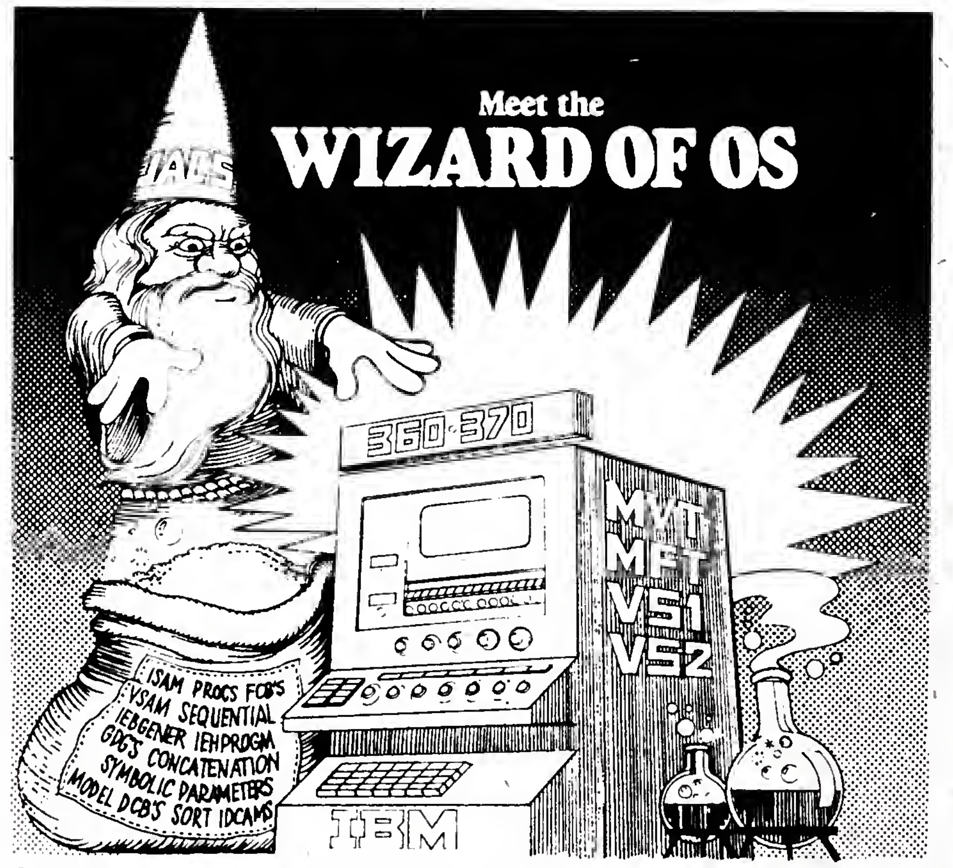
Cogar, who has been unavailable for comments to the press, has named Otto Stitz senior vice-president of international operations for the Business Machines Division.

The position supersedes that of vice-president of international marketing, formerly held by F. Gordon Smith,

BCS Names Auerbach Fellow

LONDON – Isaac L. Auerbach, president of the Auerbach Corp. for Science and Technology and its subsidiaries was elected distinguished fellow of the British Computer Society (BCS).

Distinguished fellow is the society's highest honor and has been awarded to only nine recipents in the 20 years of the society's existence. Auerbach received the award in recognition of his contributions to the development of the computer and for his leadership in founding and serving for six years as the first president of the International Federation for Information Processing.



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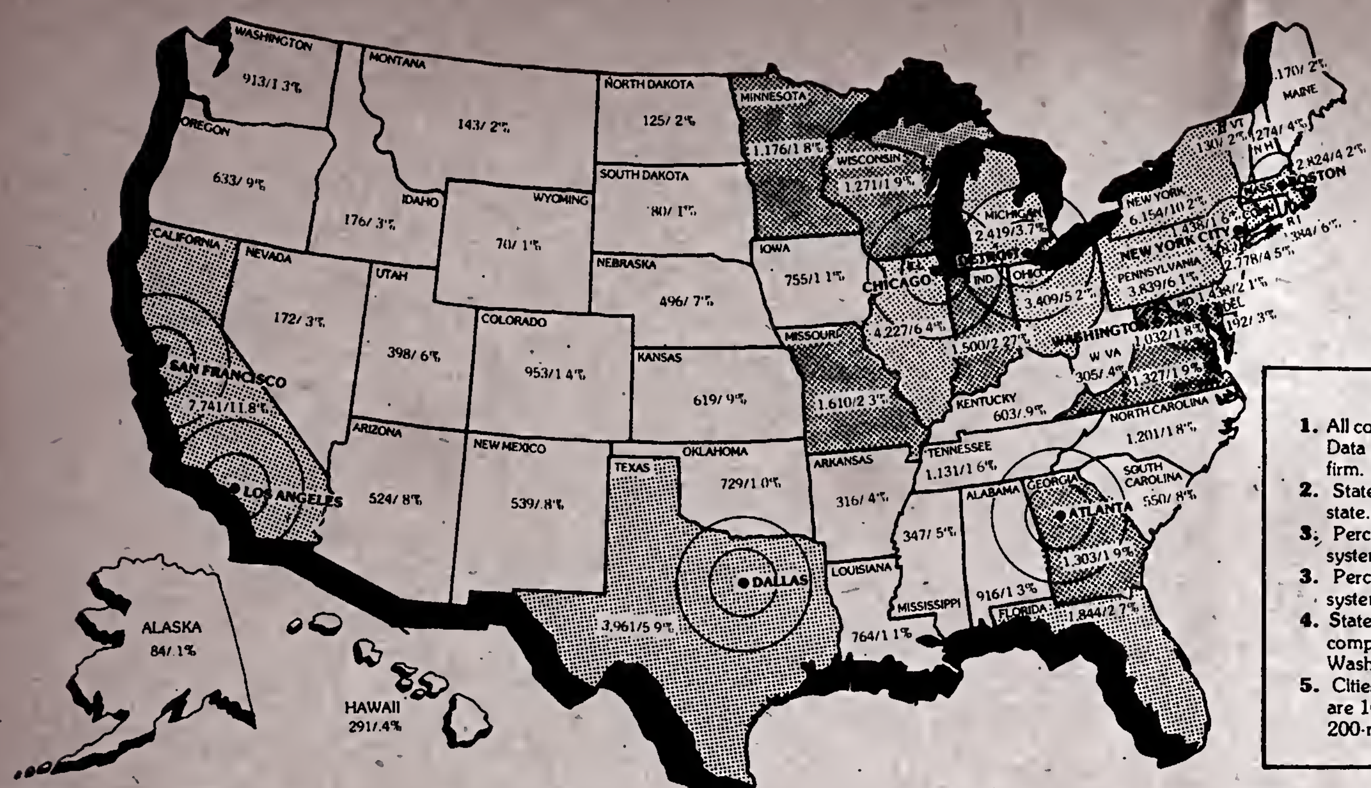

LEGEND

1. All computer figures are taken from projections of International Data Corporation, the world's largest EDP market research firm.
2. State-by-state numbers are number of computer systems in state.
3. Percentage figures represent percent of total U.S. computer systems installed in state, measured by value.
3. Percentage figures represent percent of total U.S. computer systems installed in state, measured by value.
4. States in lighter shading are ten largest measured by value of computer systems installed. States in darker shading and Washington, D.C. are next biggest.
5. Cities shown are 1976 Computer Caravan sites. Inner circles are 100-mile radius from city. Outer circles (where shown) are 200-mile radius from city.

Going your way is our way.

Computer Caravan/76 brings a national computer conference to key computer-using states across the country.

Measured by value of computer systms installed, the ten largest states in the U.S. (lighter shading on map) account for more than 60% of all computer systems in the United States. Adding the next biggest areas - 7 states and the District of Columbia (darker shading on map) - we get to more than 75% of all the U.S. Computer systems, measured by value. And it's these key states in the computer world which will be host to - or nearby - one or more of the nine cities in the Computer Caravan / 76 - the travelling computer users' forum and exhibition sponsored by *Computerworld*.

To computer professionals, this means a unique opportunity to see a national computer show without leaving the office for a week and travelling across the country. It's a chance to keep up on the latest information in our user-to-user forums and on the latest products and services in our complete exhibition.

And thousands of computer professionals will take advantage of this opportunity as the Caravan moves across the country. Unlike any other computer show, the 76 Caravan can expect attendance of 300 or more computer professionals from each of 15 states and the District of Columbia, representing 65% of all U.S. computer systems installed. That's true national coverage.

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2. For companies specializing in the OEM market, there is our new companion show, COMPDESIGN 76. Sponsored by *Computer Design* magazine, this show will appear in the same halls with the Computer Caravan in five key OEM markets: Boston, New York, Chicago, San Francisco, and Los Angeles. It will attract thousands of key computer designers, and will also be open to Caravan attendees in those cities.
3. Data communications marketers can take advantage of our DATACOMM 76 add-on, which gives you a spot in the national data communications show sponsored by *The Data Communications User* magazine.

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DP Stocks Make Wema Top 10

MONTEREY, Calif. – Several firms in the DP industry were listed among the top 10 stocks of the Western Electronics Manufacturers Associations' (Wema) 53 members as ranked by an institutional brokerage firm.

The Wema stocks as a group outperformed those of the Standard and Poors' 500 listing in several respects.

Among the 10 strongest firms in terms of relative strength were Intel Corp., Advanced Memory System, Microdata Corp., Computer Automation, Inc. and Tymshare, Inc. The relative strength is determined by calculating price changes during the past year, with more weight given for the recent three months.

Overall, the 53 Wema stocks had an average projected increase in either current or 1976 earnings of 17%, whereas the Standard and Poors average estimated increase was only 1%, according to William O'Neil, chairman of William O'Neil & Co., a Los Angeles-based firm which provided the computer-generated analyses of the Wema stocks.

According to a Datagraph rating, a system used by O'Neil, Intel, Tymshare, Microdata, Information International, Inc. and Centronics Data Computer were among the top 10. The Datagraph rating incorporates several elements that may influence stock prices and assigns weightings to reported earnings, capitalization and other factors.

The average increase in earnings by Wema firms for the past 12 months was 6%, compared with 2% for the Standard and Poors 500, O'Neil said.

However, the Standard and Poors 500 showed a stronger stability level for earnings, he added.

In terms of industry ranking, 94% of the Wema stocks were in the top half of their industry according to relative strength, the study showed.

But the firms had an average decline of 2% in the latest quarter sales, whereas the Standard and Poors 500 showed a 6% gain.

The average earnings of the Wema stocks was 1.2% compared with 4.9% for the Standard and Poors group.

Executive Corner

- Jarvis J. Slade has been elected president of Computer Investors Group, Inc.
- R.C. Phillips has been named vice-president of the systems division in Univac's development and manufacturing organization.
- Robert M. Morrill has been named vice-president of marketing operations for Prime Computer, Inc.
- Richard A. Berreth, Charles A. Dickenson and J.P. Wilson have been appointed vice-presidents of Magnetic Peripherals, Inc.
- John F. Flood has resigned as president of Standard Memories, Inc. but will remain on the board of directors. Thomas W. Russel will serve as president of the company and continue his duties as group vice-president of Applied Magnetics Corp.
- J. Edward McAteer has been elected president and chief executive officer of Action Communication Systems, Inc. following the resignation of Dan A. Hosage as president of the company and its foreign subsidiary.

Correction

Douglas A. Davidson was vice-president, national accounts, at Honeywell prior to his departure for Mohawk Data Sciences [CW, Oct. 15].

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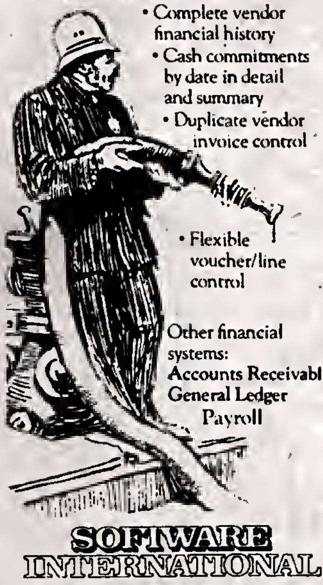

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Pertec Earnings Double in First Quarter

EL SEGUNDO, Calif. – Shortly after telling shareholders Pertec Corp.'s earnings more than doubled in the first quarter, President Ryal R. Poppa warned them the firm could experience a year of flat to slightly declining earnings.

In a previous speech, Poppa indicated Pertec intends to achieve annual revenues of $200 million by 1979, which is double the figure formerly mentioned by him.

The $200 million figure depends on successful completion of the proposed merger of Computer Machinery Corp. (CMC) into Pertec, which will give the firm end-user marketing capability, he told San Francisco analysts.

The Peripheral Equipment Division had "an outstanding quarter," exceeding revenue and profit targets, but the Business Systems Division (BSD) fell short of its objectives, he told shareholders.

Pertec is preparing for the possibility of a "significant downturn in sales in the BSD in the third and fourth quarters," Poppa said, following the decision by one of BSD's major customers to emphasize rerental of equipment.

"This situation dramatically illustrates the desirability for us to begin selling to the end-user market so as to better control our future destiny.

Quarter Net Up

For the first quarter, Pertec's earnings jumped to $874,000 or 27 cents a share compared with $341,000 or 11 cents a share in the year-ago period.

Revenues for the quarter rose to $12.5 million compared with $10 million in the same period last year.

Order rates for the Peripheral Equipment Division have shown a marked increase in the past couple of months, Poppa said, and contracts with Interdata and Digital Equipment Corp. have added to the backlog.

But at BSD, he said, order rates were down and firm delivery schedules for larger customers in the third and fourth quarter timeframe are down substantially.

CA Sets Records in Three Months

IRVINE, Calif. – Computer Automation, Inc. (CA) reported record sales income for the first quarter, signaling an end to the relatively flat performance that characterized the recessionary year of fiscal 1975.

The minicomputer company posted earnings of $591,573 or 31 cents a share and revenues of $6.6 million for the quarter ended Sept. 28.

Earnings for the quarter tripled the $195,288 or 12 cents a share reported for last year's first quarter, while this year's revenues were 28% higher than last year's $5.1 million.

President D.H. Methvin said pretax income for the first quarter was $1.2 million, or about 18% of sales, compared with last year's pretax income of $390,575, or 7.5% of sales.

Although shipments of minicomputers during the first quarter accelerated to fill customer inventories depleted by the recessionary slowdown in capital equipment manufacturing, Methvin noted backlog still rose to $11.5 million, up 15% from the $10 million reported at the end of fiscal 1975 on June 29.

Bookings for the quarter were double those of a year ago, he said.

Methvin attributed this quarter's record performance to continuous, across-the-board increases in order rates for all of the company's current product lines, including automated logic module tester systems as well as its family of minicomputers, from both new and old customers.

Many of the newcomers were attracted by recent introductions of minicomputers priced as low as $395, Methvin said. But manufacturers who are resuming volume production of such computerized products as automated banking systems, and industrial control systems are largely responsible for the firm's increased sales, and Methvin said he expects the trend to continue.

Prime Quarter Revenues Rise 70%, Earnings Continue for Nine Months

FRAMINGHAM, Mass. – Prime Computer, Inc. reported its fourth consecutive profitable quarter as third-quarter revenues rose 70% above those of the year-ago quarter.

Revenues for the three months ended Sept. 28 totaled nearly $3 million compared with $1.8 million in the year-ago period.

Earnings rose to $202,101 or 10 cents a share, including an $111,700 tax credit, compared with a loss of $139,295 in the third quarter of 1974.

Revenues Rise

For the nine months, revenues reached $7.9 million compared with almost $4.5 million for the year-ago period.

Prime's nine-month earnings totaled $410,817 or 20 cents a share, including a $211,700 tax credit, compared with a loss of $546,375 in the same period last year.

President Kenneth G. Fisher said he was encouraged with the significant increase in sales and profitability over the corresponding period last year.

He attributed the gains to increased sales in both domestic and overseas operations coupled with a continuing emphasis on increased manufacturing productivity.

Increased Credit

Prime has increased its revolving credit line with the First Pennsylvania Bank by $2.5 million, bringing the total credit line to $7 million, which expires Dec. 31, 1977.

"We estimate this increase in our line of credit will give Prime sufficient sources of external financing to meet its needs through 1976," Fisher said.

Itel Earnings Dip in Nine Months

SAN FRANCISCO – Although Itel Corp.'s earnings for the third quarter and nine months were below those of the year-ago periods, the firm expects to match or surpass its record results of last year.

For the quarter, earnings were $2.7 million or 33 cents a share compared with $2.8 million or 32 cents a share in the year-ago period, when there was a $100,000 tax credit.

Revenues climbed to $58.2 million compared with $35.5 million in the year-ago period.

For the nine months, earnings dipped to $6.5 million or 76 cents a share compared with $7.3 million or 82 cents in the year-ago period, when there was a $400,000 tax credit.

Revenues grew to $139.1 million compared with $104.5 million in the same period last year.

Itel President Peter S. Redfield observed the third-quarter results exceeded those of the preceding second quarter.

"These results reflect the continued strong performance of our Data Products Group which, during the third quarter, completed a significant transaction involving a sale of computer peripheral equipment on operating lease with the Federal government," he said.

"We continue to expect excellent results for the fourth quarter and that Itel will be able to match or surpass the record results reported for last year," he said.

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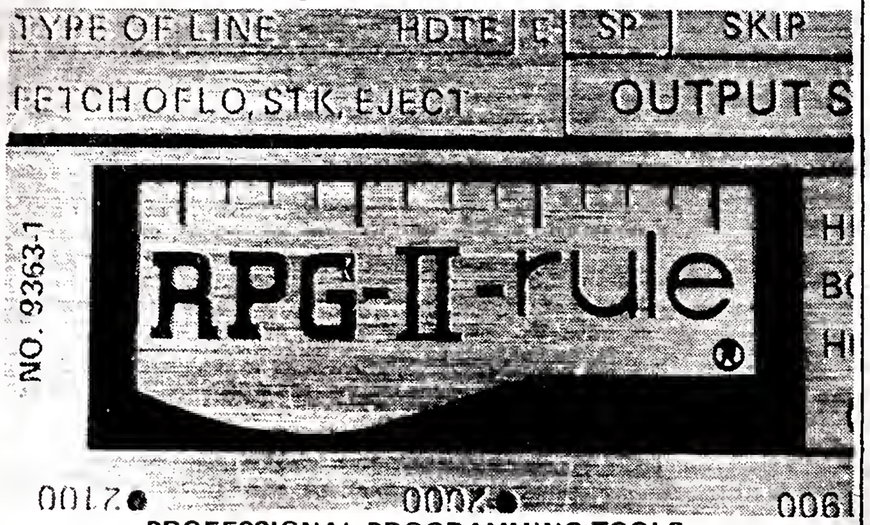

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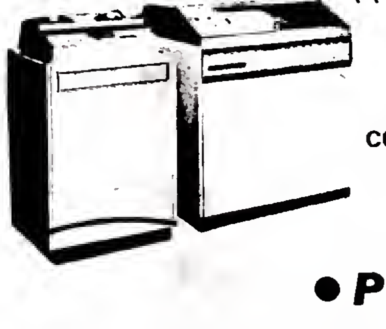

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Earnings Reports

COMPUGRAPHIC
Year Ended Sept. 27

	1975	1974
Shr Ernd	$3.16	$2.62
Revenue	74,404,000	61,413,000
Earnings	5,841,000	4,804,000
3 Mo Shr	.81	.66
Revenue	18,552,000	15,565,000
Earnings	1,518,000	1,201,000

THE COMPUTER EXCHANGE
Year Ended June 30

	1975	1974
Shr Ernd	$.30	.....
Revenue	4,043,860	$5,511,435
Earnings	207,676	(156,742)

AUTOMATIC DATA PROCESSING
Three Months Ended Sept. 30

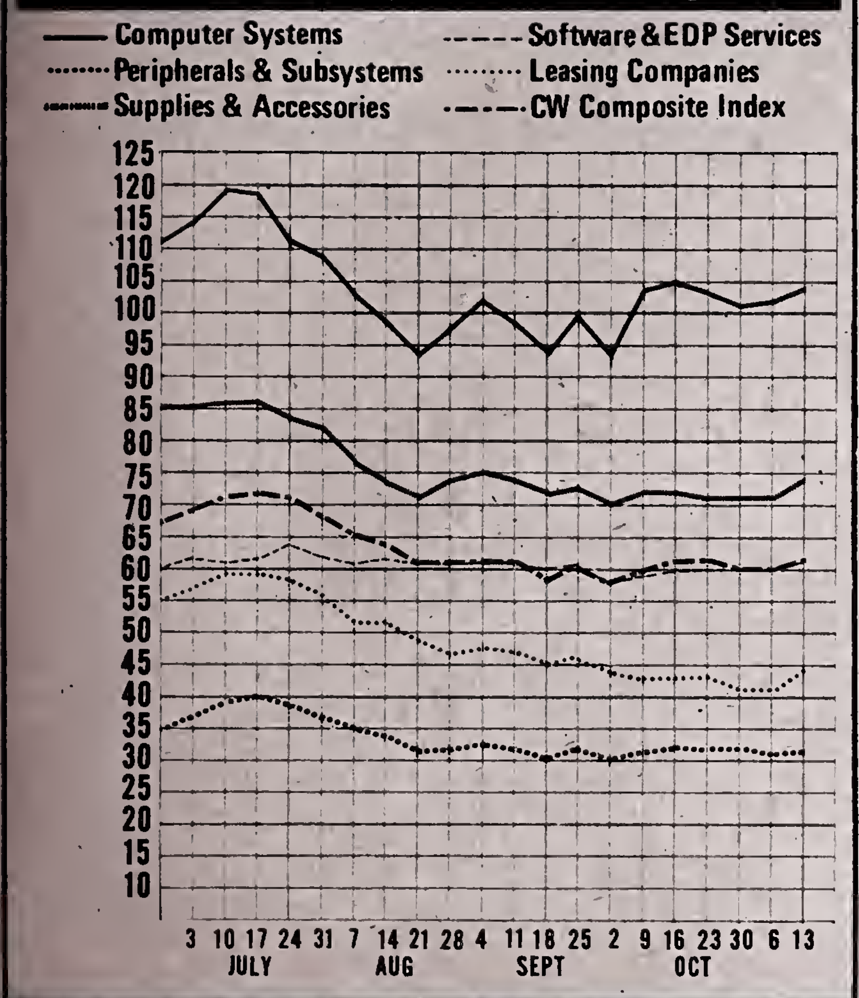
	1975	a1974
Shr Ernd	$.51	$.41
Revenue	41,283,000	34,575,000
Earnings	3,589,000	2,885,000

a-Restated.

DIGITAL EQUIPMENT
Three Months Ended Sept. 27

	1975	1974
Shr Ernd	$.95	$.63
Revenue	140,458,000	111,753,000
Earnings	11,390,000	7,488,000

COMPUTERWORLD Computer Stocks Trading Indexes



DATA 100
Three Months Ended Sept. 30

	1975	1974
Shr Ernd	$.51	$.43
Revenue	24,638,000	18,195,000
Tax Cred	780,000	547,000
Earnings	1,847,000	1,307,000
9 Mo Shr	1.35	1.06
Revenue	67,996,000	48,097,000
Tax Cred	2,038,000	1,334,000
Earnings	4,840,000	3,240,000

ADVANCED MEMORY SYSTEMS
Year Ended Sept. 26

	1975	1974
Shr Ernd	$.90	.....
Revenue	32,015,000	$32,457,000
Tax Cred	1,100,000	.....
Earnings	2,291,000	(2,119,000)
3 Mo Shr	.34	.....
Revenue	8,811,000	7,592,000
Spec Item	a424,000	(14,000)
Earnings	881,000	(2,149,000)

a-Tax-loss carryforward.

HAZELTINE
Three Months Ended Sept. 30

	1975	1974
Shr Ernd	$.24	$.07
Revenue	22,401,000	20,193,000
Earnings	a457,000	140,000
9 Mo Shr	.....	.17
Revenue	60,707,000	71,097,000
Spec Chg	.....	b680,000
Earnings	a(908,000)	354,000

a-Includes $94,000 gain on sale of an investment. b-Cumulative effect of accounting change.

COMPUTER DIMENSIONS
Three Months Ended Sept. 30

	1975	1974
Shr Ernd	$.21	$.15
Revenue	2,978,771	2,752,569
Disc Op	.....	(28,600)
Tax Cred	152,700	113,555
Earnings	333,688	231,657
9 Mo Shr	.46	.28
Revenue	8,474,789	7,477,169
Disc Op.	.....	(54,919)
Tax Cred	341,900	211,305
Earnings	717,691	431,824

DATA DISC
Three Months Ended Oct. 3

	1975	1974
Shr Ernd	.....	$.01
Revenue	$1,966,000	2,576,000
Earnings	9,000	6,000
9 Mo Shr	.....	.20
Revenue	5,465,000	7,526,000
Earnings	(57,000)	201,000

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Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, NOVEMBER 12, 1975

All statistics compiled, computed and formatted by
TRADE★QUOTES, INC.
Cambridge, Mass. 02139

EXCH		PRICE			
		1975 RANGE (1)	CLOSE NOV 12 1975	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	62-109	79 3/4	-3 1/4	-3.9
C	COMPUTER AUTOMATION	2- 10	10	0	0.0
N	CONTROL DATA CORP	11- 23	19 3/8	- 3/8	-1.8
N	DATA GENERAL CORP	10- 39	39	+3 7/8	+11.0
C	DATAPOINT CORP	6- 26	25 1/2	+1 1/4	+5.1
C	DIGITAL COMP CONTROL	1- 4	2 1/4	- 1/4	-10.0
N	DIGITAL EQUIPMENT	46-140	139 5/8	+10 7/8	+8.4
N	ELECTRONIC ASSOC.	2- 3	2 1/2	+ 1/8	+5.2
A	ELECTRONIC ENGINEER.	5- 10	7 1/2	-1 1/8	-13.0
N	FOXBORO	23- 42	28	+ 3/8	+1.3
O	GENERAL AUTOMATION	4- 14	5 1/2	+ 1/4	+4.7
C	GRI COMPUTER CORP	1- 1	5/8	0	0.0
N	HEWLETT-PACKARD CO	58-120	103 3/8	+2 7/8	+2.8
N	HONEYWELL INC	22- 40	35 1/4	+1 1/4	+3.6
N	IBM	158-225	224 3/4	+9	+4.1
C	MEMOREX	1- 10	8 1/2	- 1/8	-1.4
O	MICRODATA CORP	2- 7	7 1/8	+1	+16.3
C	MODULAR COMPUTER SYS	5- 19	11 1/2	+2	+21.0
N	NCR	15- 39	24 1/4	- 1/2	-2.0
C	PRIME COMPUTER INC	2- 6	4 3/4	0	0.0
N	PERKIN-ELMER	16- 30	25	- 3/8	-1.4
N	RAYTHEON CO	26- 59	48 3/8	0	0.0
N	SINGER COMPANY	9- 17	10	- 1/8	-1.2
N	SPERRY RAND	26- 49	44	+ 1/8	+0.2
A	SYSTEMS ENG. LABS	1- 5	3	0	0.0
N	VARIAN ASSOCIATES	7- 18	13 3/4	- 1/4	-1.7
N	WANG LABS.	7- 17	11 5/8	+ 1/2	+4.4
N	XEROX CORP	51- 86	56 5/8	+ 3/4	+1.3
	LEASING COMPANIES				
C	COMDISCO INC	1- 5	3 3/8	+ 3/4	+28.5
A	COMMERCE GROUP CORP	2- 4	2 3/8	- 1/8	-5.0
A	COMPUTER INVSTRS GRP	1- 2	5/8	+	+10.0
M	DATRONIC RENTAL	1- 1	1/2	0	0.0
A	DCL INC	0- 1	3/8	0	0.0
A	DPF INC	3- 6	4 3/8	0	0.0
C	EDP RESOURCES	1- 2	1	0	0.0
A	GRANITE MGT	1- 5	4 1/8	0	0.0
A	GREYHOUND COMPUTER	2- 3	2 5/8	+ 1/8	+5.0
N	ITEL	3- 9	6 3/8	- 1/8	-1.9
N	LEASCO CORP	4- 8	5 5/8	- 7/8	-13.4
C	LEASPAC CORP	1- 1	1/4	+ 1/8	+100.0
C	LECTRO MGT INC	1- 1	1/8	0	0.0
C	NRG INC	0- 4	1/2	- 1/8	-20.0
A	PIONEER TEX CORP	2- 7	5 1/4	- 1/4	-4.5
A	ROCKWOOD COMPUTER	1- 1	1/8	0	0.0
N	U.S. LEASING	7- 14	8	+ 1/4	+3.2

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

EXCH		PRICE			
		1975 RANGE (1)	CLOSE NOV 12 1975	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
C	ADVANCED COMP TECH	1- 1	1	0	0.0
A	APPLIED DATA RES.	1- 10	1 1/4	- 1/4	-16.6
N	AUTOMATIC DATA PROC	29- 65	59 1/4	+3 1/4	+5.8
C	BRANDON APPLIED SYST	1- 1	1/4	+ 1/8	+100.0
C	COMPUTER DIMENSIONS	2- 6	3 1/2	+ 1/2	+16.6
C	COMP ELECTION SYSTMS	3- 7	6 3/4	- 1/4	-3.5
C	COMPUTER HORIZONS	1- 1	5/8	- 1/8	-16.6
C	COMPUTER NETWORK	1- 3	3 1/8	0	0.0
N	COMPUTER SCIENCES	2- 6	4 1/2	- 1/8	-2.7
C	COMPUTER TASK GROUP	1- 1	5/8	0	0.0
C	COMPUTER USAGE	2- 4	2 3/8	+ 1/4	+11.7
C	COMSHARE	3- 4	3 1/8	+ 3/8	+13.6
C	DATATAB	1- 2	3/4	- 1/8	-14.2
A	ELECT COMP PROG	1- 1	1/8	0	0.0
N	ELECTRONIC DATA SYS.	12- 28	13 1/4	+1 1/4	+10.4
C	INFONATIONAL INC	1- 1	1/8	0	0.0
C	IPS COMPUTER MARKET.	1- 1	5/8	0	0.0
C	KEANE ASSOCIATES	2- 3	2 1/2	0	0.0
C	KEYDATA CORP	2- 3	2 1/8	+ 1/4	+13.3
C	LOGICON	3- 5	3 3/8	- 1/8	-3.5
A	MANAGEMENT DATA	1- 3	1 5/8	- 1/8	-7.1
A	NATIONAL CSS INC	6- 14	10 3/8	0	0.0
C	NATIONAL COMPUTER CO	1- 1	1/8	0	0.0
A	ON LINE SYSTEMS INC	8- 17	14 1/2	+ 5/8	+4.5
N	PLANNING RESEARCH	2- 6	3 3/8	- 3/8	-10.0
C	PROGRAMMING & SYS	1- 1	5/8	0	0.0
C	RAPIDATA INC	2- 5	3 3/8	+ 1/2	+17.3
C	REYNOLDS & REYNOLD	10- 24	17	+1 1/2	+9.6
C	SCIENTIFIC COMPUTERS	1- 1	1	0	0.0
C	SIMPLICITY COMPUTER	1- 1	1 1/8	0	0.0
O	TYMSHARE INC	7- 21	19 5/8	- 1/4	-1.2
A	URS SYSTEMS	2- 4	3 1/8	- 3/8	-10.7
N	WYLY CORP	2- 4	3	- 1/8	-4.0
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	4- 9	7 7/8	+ 1/8	+1.6
C	ADVANCED MEMORY SYS	1- 7	4 7/8	- 1/4	-4.8
N	AMPEX CORP	3- 7	5 3/4	+ 5/8	+12.1
C	ANDERSON JACOBSON	1- 3	2 1/8	0	0.0
C	BEEHIVE MEDICAL ELEC	1- 5	3	- 1/8	-4.0
A	BOLT,BERANEK & NEW	5- 13	8 1/8	+1 1/4	+18.1
N	BUNKER-RAMO	4- 8	4	- 1/8	-3.0
A	CALCOMP	4- 7	3 5/8	+ 1/8	+3.5
C	CAMBRIDGE MEMORIES	2- 5	1 7/8	- 3/8	-16.6
N	CENTRONICS DATA COMP	7- 25	18 1/8	- 1/8	-0.6
C	CODEX CORP	15- 38	36 3/4	+2 3/4	+8.0
C	COGNITRONICS	1- 2	3/4	- 1/8	-14.2
C	COMPUTER COMMUN.	1- 2	7/8	0	0.0
C	COMPUTER CONSOLES	3- 7	3 3/4	+ 1/2	+15.3
A	COMPUTER EQUIPMENT	1- 2	1 1/2	- 1/8	-7.6
C	COMPUTER MACHINERY	1- 2	7/8	0	0.0
C	COMPUTER TRANSCEIVER	1- 2	7/8	- 1/8	-12.5
C	COMPTEN	2- 5	3 1/4	- 3/8	-10.3
N	CONRAC CORP	12- 27	24 3/4	-2	-7.4

EXCH		PRICE			
		1975 RANGE (1)	CLOSE NOV 12 1975	WEEK NET CHNGE	WEEK PCT CHNGE
C	DATA ACCESS SYSTEMS	1- 3	1 3/4	+ 1/2	+40.0
C	DATA 100	5- 16	9 7/8	+ 1/2	+5.3
A	DATA PRODUCTS CORP	2- 6	4 1/8	- 1/4	-5.7
C	DATA TECHNOLOGY	1- 3	1 1/8	- 1/4	-18.1
C	DATUM INC	1- 2	7/8	0	0.0
C	DECISION DATA COMPUT	3- 7	2 7/8	- 3/8	-11.5
C	DELTA DATA SYSTEMS	1- 1	1/4	+ 1/8	+100.0
C	DI/AN CONTROLS	1- 1	3/4	0	0.0
N	ELECTRONIC M & M	1- 3	1 1/4	- 1/8	-9.0
C	FABRI-TEK	1- 1	3/4	0	0.0
C	GENERAL COMPUTER SYS	1- 2	1	- 1/4	-20.0
N	HAZELTINE CORP	3- 6	3 1/2	0	0.0
N	HARRIS CORP	18- 32	32	+1 1/4	+4.0
A	INCOTERM CORP	3- 12	9 1/8	- 3/4	-7.5
C	INFOREX INC	2- 5	3 1/8	+ 5/8	+25.0
C	INFORMATION INTL INC	8- 14	12 1/2	0	0.0
A	LUNDY ELECTRONICS	3- 3	2 7/8	0	0.0
C	MANAGEMENT ASSIST	1- 1	3/8	0	0.0
A	MILGO ELECTRONICS	8- 24	17	+1 3/4	+11.4
N	MOHAWK DATA SCI	1- 5	3 1/8	0	0.0
C	OPTICAL SCANNING	1- 3	2 5/8	0	0.0
C	PENRIL CORP	2- 2	1 1/4	0	0.0
C	PERTEC CORP	2- 8	4	0	0.0
A	POTTER INSTRUMENT	2- 2	1 3/4	0	0.0
C	PRECISION INST.	1- 1	3/8	+ 1/8	+50.0
C	QUANTOR CORP	2- 6	4 3/4	+1 1/4	+35.7
C	RECOGNITION EQUIP	2- 9	6 3/8	0	0.0
N	SANDERS ASSOCIATES	3- 11	7 7/8	- 5/8	-7.3
C	SCAN DATA	1- 3	1 3/8	+ 1/8	+10.0
C	STORAGE TECHNOLOGY	6- 17	11 1/2	- 1/2	-4.1
C	SYCOR INC	5- 22	22 1/4	+5	+28.9
C	T BAR INC	3- 6	6 1/4	0	0.0
C	TALLY CORP.	1- 5	2 3/8	- 5/8	-20.8
C	TEC INC	1- 4	2 1/2	- 1/4	-9.0
N	TEKTRONIX INC	18- 43	42 1/2	+1 1/8	+2.7
N	TELEX	1- 3	2 1/8	0	0.0
C	WANGCO INC	4- 9	6 7/8	0	0.0
C	WILTEK INC	1- 4	2 1/2	0	0.0
	SUPPLIES & ACCESSORIES				
C	BALTIMORE BUS FORMS	4- 5	4 1/4	- 1/4	-5.5
A	BARRY WRIGHT	5- 7	5 3/4	+ 1/4	+4.5
C	CYBERMATICS INC	0- 1	3/8	0	0.0
A	DATA DOCUMENTS	29- 42	32 1/4	+ 3/4	+2.3
C	DUPLEX PRODUCTS INC	12- 25	17 3/8	+2	+13.0
N	ENNIS BUS. FORMS	5- 7	5 3/8	+ 1/4	+4.8
C	GRAHAM MAGNETICS	5- 10	9	+ 3/4	+9.0
C	GRAPHIC CONTROLS	8- 21	13 1/4	+ 3/4	+6.0
N	3M COMPANY	43- 68	60 1/8	+2 7/8	+5.0
C	MOORE CORP LTD	35- 51	47 3/4	+2 1/2	+5.5
N	NASHUA CORP	9- 22	10 7/8	- 1/8	-1.1
C	STANDARD REGISTER	11- 20	15 3/4	+ 1/4	+1.6
C	TAB PRODUCTS CO	4- 8	5	0	0.0
N	UARCO	17- 24	21 1/8	+1 3/8	+6.9
C	VANIER GRAPHICS CORP	4- 7	4 1/2	+ 1/4	+5.8
A	WABASH MAGNETICS	3- 5	3 7/8	- 1/8	-3.1
N	WALLACE BUS FORMS	15- 25	17	+ 3/4	+4.6

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Rodger D. Mills, Senior Programmer/Analyst, Public Utilities District No. 1 of Snohomish County, Washington.

"They know what you don't on practically any subject—be it TP monitors, Data Base, or operating systems. Remarkable knowledge of Hardware functioning. Neat people to work with."
Dan Fish, Systems Supervisor, County of Sonoma Data Processing Center.

"GBA International's SWIFT took the lead with a 4.0 in the area of Vendor Support. The other monitors followed, the report said, with Minicomm earning a 3.4; Task/Master a 3.2; Environ/1 and Intercomm, 2.8's; and CICS, a 2.7."
Datapro as reported in Computerworld, p.14, Jan. 22.

PROGRAMMING

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Chad Julian, Director of Data Processing and Systems, Kwickset Div. of Emhart Corporation.

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Stu Fletcher, Programming Manager Cal-Farm Insurance Company.

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